A four part cumulative supplement to the 1988 edition of the NASA Thesaurus.
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INTRODUCTION

Contents of the Supplement
The NASA Thesaurus Supplement is a cumulative update of the 1988 edition of the NASA Thesaurus, NASA SP-7064. Supplements are normally published every six months. Users should consult the online thesaurus for complete and up-to-date information.

Part 1 of the Supplement updates Volume 1 of the 1988 NASA Thesaurus, the Hierarchical Listing. Complete hierarchies of all new terms are given. Changes in the hierarchies of terms are not included in order to control the size of the Supplement. New terms to this supplement are indicated by a bullet.

Part 2 updates Volume 2 of the 1988 NASA Thesaurus, the Access Vocabulary. All new terms are listed in alphabetical order along with USE references (permuted forms of posting terms and other cross-references).

Part 3 is a list of supplemental definitions of NASA Thesaurus posting terms, updating Volume 3 of the NASA Thesaurus. New terms are indicated by a bullet.

Part 4 is a list of changes. Users requiring additional information should consult the 1988 NASA Thesaurus. Comments about the NASA Thesaurus and the Supplement should be addressed to: Lexicographer, NASA Scientific and Technical Information Facility, P.O. Box 8757, BWI Airport, MD 21240.

Thesaurus Term Definitions
Publication of NASA Thesaurus definitions began with Supplement 1 to the 1985 NASA Thesaurus. Beginning with the 1988 edition, definitions were published as Volume 3 of the NASA Thesaurus. Succeeding Supplements will contain only new definitions added after the publication of the 1988 edition.

Definitions are given for most terms added since 1976 as well as for many earlier terms. Definitions of more common or general scientific terms are given a NASA slant if one exists. Certain terms are not defined as a matter of policy: common place names, chemical elements, specific models of computers, and non-technical terms. Other terms lack definitions because the NASA Thesaurus predates by a number of years the systematic effort to define terms. Nevertheless, definitions of older terms are continually being added.

The following data are provided for each definition: term in uppercase-lowercase form, definition per se, source, and year the term (not the definition) was added to the NASA Thesaurus. The NASA History Office is the authority for capitalization in satellite and spacecraft names.

Sources of Definitions
Definitions with no source given were constructed by lexicographers at the NASA Scientific and Technical Information (STI) Facility, who rely on the following sources for their information: experts in the field, literature searches from the NASA STI Database, and specialized references.

Definitions come from the following sources:


ASTM. Compilation of ASTM Standard Definitions, 6th edition. Philadelphia, PA, ASTM, 1986. Copyright, the American Society for Testing and Materials (ASTM). All rights reserved. Used with the permission of ASTM. Two ASTM sources are distinguished: standards are identified by an alphanumeric designation with no hyphen; committees are identified by an alphanumeric designation with a hyphen. The original definitions appeared in the Annual Book of ASTM Standards.

In some cases, definitions from these sources have been subjected to minor editorial alterations, for example, to make a definition agree in number with the NASA form of the term.

**Retrospective Indexing**
Since 1984 all new terms are retrospectively assigned to past database records using a method which combines automated search strategies and manual review.

Record updating usually takes place within three months following the addition of a new term to the *NASA Thesaurus* and covers the period from 1968 to date.

**Boldfaced Terms in Definitions**
With the third *NASA Thesaurus Supplement*, *NASA Thesaurus* terms that appear in the main text of a definition and are also defined separately are boldfaced. Such boldfaced terms, including previously defined terms will appear for the most part in the definitions part of the *Supplement*. A new program for computer aided editing of boldfacing uses NASA's existing Machine Aided Indexing (MAI) programs to identify variant forms of terms that can be regularized with NASA Thesaurus terminology and thus provide more extensive cross-referencing through boldfacing. This system of linkages facilitates the use of definitions as they are added and intertwines new definitions with previous material.

**Standardized Geology Definitions Included**
As noted earlier, *NASA Thesaurus* terms that have been defined in the third edition of the American Geological Institute's "Glossary of Geology" are now being added to *NASA Thesaurus Supplements*. The "Glossary of Geology" is a standardized and widely accepted authority in the field of geology terminology. As with previous sources such as ASTM, DOE, IEEE, and SP-7, editorial alterations are sometimes made primarily for plurality and now, with the aid of MAI, of term form for boldfacing.
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ACCESS VOCABULARY
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PART 3
DEFINITIONS
A cumulative list of new definitions of NASA Thesaurus terms. Uppercase-lowercase information is included.

PART 4
CHANGES
A list of new deletions, transfers and changes to the NASA Thesaurus.
A

ACOUSTIC COUPLING
GS COUPLING
RT ACOUSTIC ATTENUATION
ACOUSTIC EXCITATION
ACOUSTICS
ENERGY TRANSFER
SOUND WAVES
WAVE INTERACTION

• ADVANCED LAUNCH SYSTEM (STS)
UF ALS (LAUNCH SYSTEM)
GS TRANSPORTATION
SPACE TRANSPORTATION
SPACE TRANSPORTATION SYSTEM
ADVANCED LAUNCH SYSTEM (STS)
RT HEAVY-LIFT LAUNCH VEHICLES
LAUNCH VEHICLE CONFIGURATIONS
LAUNCH VEHICLES
NASA PROGRAMS
NASA SPACE PROGRAMS
PAYLOAD DELIVERY (STS)
REUSABLE LAUNCH VEHICLES
SHUTTLE DERIVED VEHICLES
SPACE SHUTTLES
SPACECRAFT DESIGN

• ADVANCED SOLID ROCKET MOTOR (STS)
UF ARMS (STS)
GS ENGINES
ROCKET ENGINES
BOOSTER ROCKET ENGINES
SPACE SHUTTLE BoostERS
ADVANCED SOLID ROCKET MOTOR (STS)
SOLID PROPULLENT ROCKETS
SPACE SHUTTLE BoostERS
ADVANCED SOLID ROCKET MOTOR (STS)
RT SPACE SHUTTLE ASCENT STAGE
SPACE TRANSPORTATION SYSTEM
ADVANCED VERY HIGH RESOLUTION RADIOMETER
UF AVHRR
GS MEASURING INSTRUMENTS
SATELLITE-BORNE INSTRUMENTS
ADVANCED VERY HIGH RESOLUTION RADIOMETER
RT NOAA 6 SATELLITE
NOAA 7 SATELLITE
NOAA 8 SATELLITE
REMOTE SENSORS
TIROS N SERIES SATELLITES

• ALS (LAUNCH SYSTEM)
USE ADVANCED LAUNCH SYSTEM (STS)

ANTIGUA AND BARBUDA
GS LANDFORMS
WEST INDIES
ANTIGUA AND BARBUDA
NATION
ANTIGUA AND BARBUDA
RT CARIBBEAN REGION

APPLICATION SPECIFIC INTEGRATED CIRCUITS
UF ASIC
CUSTOM INTEGRATED CIRCUITS
CIRCUITS
INTEGRATED CIRCUITS
APPLICATION SPECIFIC INTEGRATED CIRCUITS

APPLICATION SPECIFIC INTEGRATED-(CONT.)
RT CHIPS (ELECTRONICS)
LARGE SCALE INTEGRATION
VERY LARGE SCALE INTEGRATION

ARGENTINE SPACE PROGRAM
GS PROGRAMS
SPACE PROGRAMS
ARGENTINE SPACE PROGRAM
RT ARGENTINA

• ARMS (ROBOTICS)
USE ROBOT ARMS

ASIC
USE APPLICATION SPECIFIC INTEGRATED CIRCUITS

ASRM (STS)
USE ADVANCED SOLID ROCKET MOTOR (STS)

ATMOSPHERIC GENERAL CIRCULATION MODELS
GS MODELS
ATMOSPHERIC MODELS
ATMOSPHERIC GENERAL CIRCULATION MODELS
RT ATMOSPHERIC CIRCULATION
ATMOSPHERIC GENERAL CIRCULATION EXPERIMENT
CLIMATOLOGY
LONG RANGE WEATHER FORECASTING
NUMERICAL WEATHER FORECASTING

ATMOSPHERIC SEEING
USE SEEING (ASTRONOMY)

AUSTRALIAN SPACE PROGRAM
GS PROGRAMS
SPACE PROGRAMS
AUSTRALIAN SPACE PROGRAM
RT AUSTRALIA

AVHRR
USE ADVANCED VERY HIGH RESOLUTION RADIOMETER

B

• BEAMED POWER
USE POWER BEAMING

BIRKELAND CURRENTS
GS ELECTRIC CURRENT
FIELD ALIGNED CURRENTS
BIRKELAND CURRENTS
IONOSPHERIC CURRENTS
BIRKELAND CURRENTS
ELECTRICITY
ATMOSPHERIC ELECTRICITY
IONOSPHERIC CURRENTS
BIRKELAND CURRENTS
RT AURORAL ELECTROJETS
AURORAL ZONES
ELECTROJETS
GEOMAGNETISM
IONOSPHERIC DISTURBANCES
MAGNETIC DISTURBANCES
MAGNETIC STORMS

BLAZARS
GS CELESTIAL BODIES
BLAZARS

BLAZARS-(CONT.)
RT ACCELERATION DEKKS
ACTIVE GALACTIC NUCLEI
ACTIVE GALAXIES
DISK GALAXIES
EXTRAGALACTIC RADIO SOURCES
INFRARED ASTRONOMY
QUASARS
RADIO GALAXIES
RADIO SOURCES (ASTRONOMY)
SEYFERT GALAXIES

• BLOCK COPOLYMERS
GS COPOLYMERS
BLOCK COPOLYMERS
RT COPOLYMERIZATION
POLYBUTADIENE
POLYMERS
POLYSTYRENE

• BOUNDARY DETECTION (IMAGERY)
USE EDGE DETECTION

BRAGG CELLS
GS MODULATORS
BRAGG CELLS
RT ACCUSTO-OPTICS
AMPLITUDE MODULATION
CRYSTAL OPTICS
LIGHT BEAMS
LIGHT MODULATION
PHASE DEMODULATORS
PHASE MODULATION
ULTRASONIC LIGHT MODULATION

• BREAKUP (SPACECRAFT)
USE SPACECRAFT BREAKUP

BROWN DWARF STARS
GS CELESTIAL BODIES
STARS
RT COMPANION STARS
COOL STARS
DWARF STARS
PHOTOSTARS
STELLAR EVOLUTION

• BURAN SPACE SHUTTLE
GS MANNED SPACECRAFT
SPACE SHUTTLES
Buran SPACE SHUTTLE
REENTRY VEHICLES
RECOVERABLE SPACECRAFT
REUSABLE SPACECRAFT
SPACE SHUTTLES
Buran SPACE SHUTTLE
SoviET SPACECRAFT
Buran SPACE SHUTTLE
AEROSPACE PLANES
U.S.S.R. SPACE PROGRAM

C

C (PROGRAMMING LANGUAGE)
GS LANGUAGES
PROGRAMMING LANGUAGES
HIGH LEVEL LANGUAGES
C (PROGRAMMING LANGUAGE)
RT COMPILERS
COMPUTER PROGRAMMING EXPERT SYSTEMS
<table>
<thead>
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**CASSINI MISSION**
- GS SPACE MISSIONS
- CASSINI MISSION
- RT EUROPEAN SPACE AGENCY
- EUROPEAN SPACE PROGRAMS
- INTERNATIONAL COOPERATION
- MARINER MARK 2 SPACECRAFT
- MISSIONS
- NASA SPACE PROGRAMS
- SATURN (PLANET)
- SPACE EXPLORATION
- SPACE PROBES
- TITAN

**CENOZOIC ERA**
- GS SPACE MISSIONS
- CENOZOIC ERA
- TERTIARY PERIOD
- EXTINCTION
- GEOCHRONOLOGY
- PALEONTOLOGY

**CHAOS**
- RT BRANCHING (MATHEMATICS)
- Mathematical Models
- Nonlinear Systems
- Period Doubling
- Stochastic Processes
- Strange Attractors

**CENTRAL BULGE (GALAXIES)**
- GS SPACE MISSIONS
- MUSCLE
- SPACE MISSIONS
- CENTRAL BULGE
- SPACE PROBES

**COMET RENDEZVOUS ASTEROID FLYBY MISSION**
- GS SPACE MISSIONS
- CASSINI MISSION
- RT EUROPEAN SPACE AGENCY
- EUROPEAN SPACE PROGRAMS
- INTERNATIONAL COOPERATION
- MARINER MARK 2 SPACECRAFT
- MISSIONS
- NASA SPACE PROGRAMS
- SATURN (PLANET)
- SPACE EXPLORATION
- SPACE PROBES

**COD (CRACKS)**
- USE CRACK OPENING DISPLACEMENT

**CRACK OPENING DISPLACEMENT**
- UF COD (CRACKS)
- GS DISPLACEMENT
- RT CRACK PROPAGATION
- CRACKING (FRActuring)
- CRACKS
- FRACTURE MECHANICS
- FRACTURE STRENGTH
- FRACTURES (MATERIALS)
- FRACTURING
- GAP
- NOTCH TESTS
- NOTCHES
- VCDs

**CRAF MISSION**
- USE COMET RENDEZVOUS ASTEROID FLYBY MISSION

**CRETACEOUS PERIOD**
- GS MESOZOIC ERA
- CRETACEOUS PERIOD
- CRETACEOUS-TERTIARY BOUNDARY
- GEOCHRONOLOGY
- PALEONTOLOGY
- TERTIARY PERIOD

**CRETACEOUS-TERTIARY BOUNDARY**
- K-T BOUNDARY

**CUSTOM INTEGRATED CIRCUITS**
- USE APPLICATION SPECIFIC INTEGRATED CIRCUITS

**CYTOMETRY**
- UF CYTOPHOTOMETRY
- RT CELLS (BIOLOGY)
- CYTOLOGY
- MICROSCOPY

**CYTOPHOTOMETRY**
- USE CYTOMETRY

**CZECHOSLOVAKIAN SPACE PROGRAM**
- GS SPACE MISSIONS
- SPACE MISSIONS
- MUSCLE
- CZECHOSLOVAKIAN SPACE PROGRAM

**COMPUTER VIRUSES**
- RT COMPUTER INFORMATION SECURITY
- COMPUTER PROGRAM INTEGRITY
- COMPUTER PROGRAMMING
- COMPUTER PROGRAMS
- COMPUTER SYSTEMS PROGRAMS
- SOFTWARE ENGINEERING

**DISK OPERATING SYSTEM (DOS)**
- GS SPACE MISSIONS
- DOS
- USB ROUTINES
- USB SYSTEMS

**DJIJIBOUTI**
- GS NATIONS
- DJIJIBOUTI
- RT AFRICA

**ECHELLE GRATINGS**
- GS GRATINGS (SPECTRA)
- USE GRATINGS

**EFFECTORS**
- SN (USE OF A MORE SPECIFIC TERM IS RECOMMENDED—CONSULT THE TERMS LISTED BELOW)
- RT ACTUATORS
- CONTROL EQUIPMENT
- END EFFECTORS
- MANIPULATORS

**ELECTROMAGNETIC COUPLING**
- GS COUPLING
- USE ELECTROMAGNETIC COUPLING

**ELECTRON-POSITRON PAIRS**
- GS PARTICLES
- ELECTRON-POSITRON PAIRS
- RELATIVISTIC PARTICLES

**ELECTRON-POSITRON PLASMAS**
- GS PARTICLES
- ELECTRON-POSITRON PLASMAS

**ELLIPSOMETRY**
- RT DIMENSIONAL MEASUREMENT
- ELLIPSOMETRERS
- ELLIPTICITY
- FILM THICKNESS
- MEASUREMENT
- OPTICAL MEASUREMENT
- POLARIZED LIGHT

**ENDEAVOUR (ORBITER)**
- GS MANNED SPACECRAFT
- ENDEAVOUR (ORBITER)
- SPACE SHUTTLE ORBITERS

**FUZZY LOGIC**
- GS PARTIAL IMPUTATION
- FUZZY LOGIC

**GALAXY**
- GS SPACE MISSIONS
- GALAXIES
- SPACE MISSIONS

**GEOCHRONOLOGY**
- GS SPACE MISSIONS
- GEOCHRONOLOGY
- PALEONTOLOGY

**GEOMETRY**
- GS SPACE MISSIONS
- COMPUTATIONAL GEOMETRY

**GRAVES**
- GS SPACE MISSIONS
- CASSINI MISSION
- RT EUROPEAN SPACE AGENCY
- EUROPEAN SPACE PROGRAMS
- INTERNATIONAL COOPERATION
- MARINER MARK 2 SPACECRAFT
- MISSIONS
- NASA SPACE PROGRAMS
- SATURN (PLANET)
- SPACE EXPLORATION
- SPACE PROBES

**GRID**
- GS SPACE MISSIONS
- GRID
### General Circulation Models (Atmospheric)

**Use** interacting galaxies

### Global Warming

**Use** atmospheric general circulation models

#### Global Warming

- **GS** heating
  - atmospheric heating
  - global warming
  - atmospheric temperature
  - climate change
  - global air pollution
  - greenhouse effect
  - stratospheric warming

#### Infrared Cirrus (Astronomy)

- **RT** clouds (cosmic dust)
  - galactic radiation
  - infrared astronomy
  - infrared radiation
  - infrared sources (astronomy)
  - interstellar matter
  - molecular clouds

#### Interacting Galaxies

- **UF** galactic interaction
  - celestial bodies
  - galaxies

#### Laser Power Beaming

- **UF** power transmission (lasers)
  - power beaming

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**NASA Thesaurus Supplement (Part 1)**

**ENDEAVOUR (Orbiter)-(CONT.)**
- Space Shuttle Orbiter

**Field Aligned Currents**

- **GS** electric current
  - field aligned currents

**Flux Transfer Events**

- **GS** magnetic properties
  - flux transfer events

**Galactic Bulge**

- **UF** central bulge (galaxies)
  - nuclear bulge (galaxies)

**Galaxy Interaction**

- **GS** cloud glaciation
  - cloud physics
  - hailstorms
  - ice formation
  - ice nuclei
  - snow

**Grid Generation (Mathematics)**

- **UF** mesh generation (mathematics)
  - computational fluid dynamics
  - computational grids
  - coordinates
  - finite difference theory
  - finite element method
  - multigrid methods

**Hairopin Vortices**

- **RT** plasma control
  - stellarators

**Heliotrons**

- **GS** nuclear reactors
  - fusion reactors

**Kappa-Epsilon Turbulence Model**

- **RT** closure law
  - computational fluid dynamics
  - flow equations
  - turbulent boundary layer
  - turbulent flow

**K-T Boundary**

- **Use** cretaceous-tertiary boundary

**Knowledge-Based Artificial Intelligence**

- **RT** artificial intelligence
  - data bases
  - expert systems
  - knowledge representation

**Large Deployable Reflector**

- **UF** lidar (telescope)
  - scientific satellites
  - astronomical satellites
  - large deployable reflector
  - observatories
  - astronomical observatories
  - astronomical satellites
  - large deployable reflector
  - telescopes
  - infrared telescopes
  - large deployable reflector
  - reflecting telescopes
  - large deployable reflector
  - spaceborne telescopes
  - large deployable reflector
  - infrared astronomy
  - large space structures
  - reflectors
  - space erectable structures
  - submillimeter waves

**Laser Beams**

- **SN** (limited to the transmission and interactions of laser radiation, for the quantitative and qualitative characteristics of the radiation produced by a laser use "laser outputs")
  - laser radiation
  - beams (radiation)
  - light beams
  - laser beams
  - coherent radiation
  - coherent electromagnetic radiation
  - laser beams
  - electromagnetic radiation
  - coherent electromagnetic radiation
  - laser beams
  - light beams
  - laser beams

**Laser Power Beaming**

- **UF** power transmission (lasers)
  - power beaming
LASER RADIATION

LASER POWER BEAMING (CONT.)
LASER POWER BEAMING
RT ENERGY CONVERSION LASER PROPULSION MICROPHONE POWER BEAMING MICROPHONE TRANSMISSION SATELLITE POWER TRANSMISSION SPACECRAFT POWER SUPPLIES LASER RADIATION
USE LASER BEAMS

LD R (TELESCOPE)
USE LARGE DEPLOYABLE REFLECTOR

LEARNING MACHINES
USE MACHINE LEARNING

LIGHT HELICOPTERS
GS LIGHT AIRCRAFT
LIGHT HELICOPTERS
- OH-4 HELICOPTER
- OH-5 HELICOPTER
- OH-6 HELICOPTER
- OH-58 HELICOPTER
V/STOL AIRCRAFT
- ROTARY WING AIRCRAFT
- HELICOPTERS

RT LIGHT HELICOPTERS
- OH-4 HELICOPTER
- OH-5 HELICOPTER
- OH-6 HELICOPTER
- OH-58 HELICOPTER
RT AIRCRAFT
- MILITARY HELICOPTERS
- OBSERVATION AIRCRAFT

LIQUID OXYGEN HYDROCARBON ROCKET ENGINES
USE OXYGEN-HYDROCARBON ROCKET ENGINES

LOX-HYDROCARBON ROCKET ENGINES
USE OXYGEN-HYDROCARBON ROCKET ENGINES

LUXEMBOURG SPACE PROGRAM
GS PROGRAMS
- SPACE PROGRAMS
- EUROPEAN SPACE PROGRAMS
- LUXEMBOURG SPACE PROGRAM
RT LUXEMBOURG

M

MACHINE LEARNING
USE LEARNING MACHINES
GS AUTOMATIC CONTROL
- ADAPTIVE CONTROL
- MACHINE LEARNING
RT ARTIFICIAL INTELLIGENCE
- AUTOMATA THEORY
- CYBERNETICS
- FEEDBACK CONTROL
- MACHINES
- SELF ORGANIZING SYSTEMS
- TEACHING MACHINES

MAN TENDED FREE FLYERS
USE MANNED SPACECRAFT
GS MANNED SPACECRAFT
- MAN TENDED FREE FLYERS
- SPACE PLATFORMS
- MAN TENDED FREE FLYERS
- STATIONS
- SPACE STATIONS
RT COLUMBUS SPACE STATION
- EUROPEAN SPACE PROGRAMS
- HERMES MANNED SPACEPLANE
- INTRACIST TRANSFER VEHICLES
- ORBIT TRANSFER VEHICLES
- ORBITAL SERVICING
- RECOVERABLE SPACECRAFT
- SPACE STATION PAYLOADS
- SPACEBORNE EXPERIMENTS
- SPACECRAFT MODULES

MARS ROVER SAMPLE RETURN MISSION
USE MARS SAMPLE RETURN MISSIONS

MARS SAMPLE RETURN MISSIONS
USE MARS ROVER SAMPLE RETURN MISSIONS

MEXICAN SPACE PROGRAM
GS PROGRAMS
- SPACE PROGRAMS
- MEXICAN SPACE PROGRAM
RT MEXICO

MICROPHONE POWER BEAMING
USE POWER TRANSMISSION (MICROPHONE)

MICROPHONE POWER BEAMING
USE LASER POWER BEAMING
- MICROPHONE POWER BEAMING
- SATELLITE POWER TRANSMISSION

MICROPHONE POWER BEAMING (CONT.)
SPACECRAFT POWER SUPPLIES

MICROPHONE SIGNATURES
USE SIGNATURES
GS SPECTRAL SIGNATURES
- MICROPHONE SIGNATURES
RT BACKSCATTERING
- MICROWAVE EMISSION
- MICROWAVE SCATTERING
- MICROWAVES
- RADAR SIGNATURES
- SIGNATURE ANALYSIS

MIXING LAYERS (FLUIDS)
RT ADVECTION
- ATMOSPHERIC BOUNDARY LAYER
- ATMOSPHERIC STRATIFICATION
- BOUNDARY LAYERS
- CONVECTION
- EXMAM LAYER
- JET MIXING FLOW
- LAMINAR MIXING
- MIXING
- MIXING LENGTH FLOW THEORY
- SHEAR LAYERS
- TURBULENT BOUNDARY LAYER
- TURBULENT FLOW THEORY
- TWO FLUID MODELS

MOONLETS
GS CELESTIAL BODIES
- MOONLETS
RT JUPITER RINGS
- NATURAL SATELLITES
- PLANETARY RINGS
- SATURN RINGS
- URANUS RINGS

MPP (COMPUTERS)
USE MASSIVELY PARALLEL PROCESSORS

MTFF (SPACE STATION)
USE MAN TENDED FREE FLYERS

N

NEPTUNE SATELLITES
GS CELESTIAL BODIES
- NEPTUNE SATELLITES
- NERIE
- TRITON

NERIE
GS CELESTIAL BODIES
- NATURAL SATELLITES
- NEPTUNE SATELLITES
- NERIE
RT NEPTUNE (PLANET)

NETHERLANDS SPACE PROGRAM
GS PROGRAMS
- SPACE PROGRAMS
- EUROPEAN SPACE PROGRAMS
- NETHERLANDS SPACE PROGRAM
RT ASTRONOMICAL, NETHERLANDS
- SATELLITE
- NETHERLANDS

NEW ZEALAND SPACE PROGRAM
GS PROGRAMS
- SPACE PROGRAMS
- NEW ZEALAND SPACE PROGRAM
RT NEW ZEALAND

NORTHERN IRELAND
GS NATIONS
- UNITED KINGDOM
- NORTHERN IRELAND
RT EUROPE

NUCLEAR ASTROPHYSICS
GS ASTROPHYSICS
- NUCLEAR ASTROPHYSICS
- NUCLEAR PHYSICS
- NUCLEAR ASTROPHYSICS
RT COSMOLOGY
- NUCLEAR PARTICLES
POLYMER BLENDS (CONT.)

- POWER BEAMING
  - POWER BEAMING
    - BEAMED POWER
    - LASER POWER BEAMING
      - MICROWAVE POWER BEAMING
  - SATELLITE POWER TRANSMISSION
    - ENERGY CONVERSION
    - LASER PROPULSION
  - MICROWAVE TRANSMISSION
  - POWER TRANSMISSION
  - SOLAR POWER SATELLITES
  - SPACECRAFT POWER SUPPLIES

- POWER TRANSMISSION (LASERS)
  - LASER POWER BEAMING
  - MICROWAVE POWER BEAMING

- PROTEIN CRYSTAL GROWTH
  - GROWTH
  - PROTEIN CRYSTAL GROWTH

- POWER TRANSMISSION (MICROWAVE)
  - MICROFARAD POWER TRANSMISSION
  - SPACECRAFT POWER SUPPLIES

- ROTATIONAL SPECTRA
  - MOLECULAR SPECTRA
  - VIBRATIONAL SPECTRA

- ROTORDYNAMICS
  - ROTORDYNAMICS
  - NEGATIVE RESISTANCE DEVICES
  - QUANTUM ELECTRONICS
  - QUANTUM WELLS
  - TRANSISTORS
  - TUNNEL DIODES
  - TUNNELING

- RIBLETTS
  - MICROFARAD POWER TRANSMISSION
  - SPACECRAFT POWER SUPPLIES

- ROBOT DYNAMICS
  - END EFFECTORS
  - MANIPULATORS
  - ROBOTIC DYNAMICS
  - ROBOTS

- ROBOTICS
  - END EFFECTORS
  - MANIPULATORS
  - ROBOTIC DYNAMICS
  - ROBOTS

- ROTORDYNAMICS
  - ROTORDYNAMICS
  - NEGATIVE RESISTANCE DEVICES
  - QUANTUM ELECTRONICS
  - QUANTUM WELLS
  - TRANSISTORS
  - TUNNEL DIODES
  - TUNNELING

- RHODAMINE
  - DYES
  - ORGANIC COMPOUNDS
  - CYCLIC COMPOUNDS
  - QUANTUM ELECTRONICS

- RECORDS MANAGEMENT
  - MANAGEMENT
  - INFORMATION MANAGEMENT
  - DATA MANAGEMENT
  - INFORMATION SYSTEMS
  - MANAGEMENT INFORMATION SYSTEMS
  - RECORDS

- REENTRY BREAKUP
  - SPACECRAFT BREAKUP

- RESONANT TUNNELING (CONT.)
  - SPACECRAFT BREAKUP

- RIBLETTS
  - MICROFARAD POWER TRANSMISSION
  - SPACECRAFT POWER SUPPLIES

- ROBOT DYNAMICS
  - END EFFECTORS
  - MANIPULATORS
  - ROBOTIC DYNAMICS
  - ROBOTS

- ROBOTICS
  - END EFFECTORS
  - MANIPULATORS
  - ROBOTIC DYNAMICS
  - ROBOTS

- ROTORDYNAMICS
  - ROTORDYNAMICS
  - NEGATIVE RESISTANCE DEVICES
  - QUANTUM ELECTRONICS
  - QUANTUM WELLS
  - TRANSISTORS
  - TUNNEL DIODES
  - TUNNELING

- RHODAMINE
  - DYES
  - ORGANIC COMPOUNDS
  - CYCLIC COMPOUNDS
  - QUANTUM ELECTRONICS

- RECORDS MANAGEMENT
  - MANAGEMENT
  - INFORMATION MANAGEMENT
  - DATA MANAGEMENT
  - INFORMATION SYSTEMS
  - MANAGEMENT INFORMATION SYSTEMS
  - RECORDS

- REENTRY BREAKUP
  - SPACECRAFT BREAKUP

- RESONANT TUNNELING (CONT.)
  - SPACECRAFT BREAKUP

- RIBLETTS
  - MICROFARAD POWER TRANSMISSION
  - SPACECRAFT POWER SUPPLIES

- ROBOT DYNAMICS
  - END EFFECTORS
  - MANIPULATORS
  - ROBOTIC DYNAMICS
  - ROBOTS

- ROBOTICS
  - END EFFECTORS
  - MANIPULATORS
  - ROBOTIC DYNAMICS
  - ROBOTS

- ROTORDYNAMICS
  - ROTORDYNAMICS
  - NEGATIVE RESISTANCE DEVICES
  - QUANTUM ELECTRONICS
  - QUANTUM WELLS
  - TRANSISTORS
  - TUNNEL DIODES
  - TUNNELING

- RHODAMINE
  - DYES
  - ORGANIC COMPOUNDS
  - CYCLIC COMPOSITORS
  - QUANTUM ELECTRONICS

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  - MANAGEMENT
  - INFORMATION MANAGEMENT
  - DATA MANAGEMENT
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  - MANAGEMENT INFORMATION SYSTEMS
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  - ROBOTIC DYNAMICS
  - ROBOTS

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  - MANIPULATORS
  - ROBOTIC DYNAMICS
  - ROBOTS

- ROTORDYNAMICS
  - ROTORDYNAMICS
  - NEGATIVE RESISTANCE DEVICES
  - QUANTUM ELECTRONICS
  - QUANTUM WELLS
  - TRANSISTORS
  - TUNNEL DIODES
  - TUNNELING

- RHODAMINE
  - DYES
  - ORGANIC COMPOUNDS
  - CYCLIC COMPOSITORS
  - QUANTUM ELECTRONICS
TOTAL OZONE MAPPING-(CONT.)
SPECTROMETER
OPTICAL EQUIPMENT
OPTICAL MEASURING INSTRUMENTS
PHOTOMETERS
ULTRAVIOLET SPECTROMETERS
TOTAL OZONE MAPPING
SPECTROMETER

ANTARCTIC REGIONS
NIMBUS 7 SATELLITE
OZONE DEPLETION
OZONOMETRY

TOTAL VARIATION DIMINISHING
SCHEMES
USE TVD SCHEMES

TRANSITION FLIGHT
RT AIRCRAFT MANEUVERS
VERTICAL FLIGHT
HOVERING
V/STOL AIRCRAFT

TRANSPUTERS
GS DATA PROCESSING EQUIPMENT
COMPUTERS
TRANSPUTERS
RT ARCHITECTURE (COMPUTERS)
DISTRIBUTED PROCESSING
INTERPROCESSOR COMMUNICATION
MICROPROCESSORS
PARALLEL PROCESSING (COMPUTERS)

TRAPPED VORTICES
UF VORTEX TRAPS
GS VORTICES
TRAPPED VORTICES
RT COUNTERFLOW
FLOW DISTRIBUTION
MIXING
ROTATING FLUIDS
ROTATING LIQUIDS
TURBULENT MIXING
TURBULENT WAKES
VOXEL RINGS
VORTICITY

TREND ANALYSIS
RT FAILURE ANALYSIS
PERFORMANCE PREDICTION
PREDICTION ANALYSIS TECHNIQUES
RELIABILITY ANALYSIS
STATISTICAL ANALYSIS
TIME SERIES ANALYSIS
TRENDS

TRIPLE STARS
GS CELESTIAL BODIES
STARS
TRIPLE STARS
RT BINARY STARS
COMPANION STARS
STELLAR SYSTEMS
THREE BODY PROBLEM

TURBULENCE MODELS
GS MODELS
MATHEMATICAL MODELS
TURBULENCE MODELS
K- EPSILON TURBULENCE MODEL
RT COMPUTATIONAL FLUID DYNAMICS
FLOW EQUATIONS
MIXING LENGTH FLOW THEORY
TURBULENT BOUNDARY LAYER
TURBULENT FLOW

TVD SCHEMES
UF TOTAL VARIATION DIMINISHING
SCHEMES
GS ANALYSIS (MATHEMATICS)
NUMERICAL ANALYSIS
APPROXIMATION
RT TVD SCHEMES
COMPUTATIONAL FLUID DYNAMICS
FINITE DIFFERENCE THEORY
FINITE VOLUME METHOD

TWO DIMENSIONAL MODELS-(CONT.)
TWO DIMENSIONAL MODELS
RT COMPUTERIZED SIMULATION
MATHEMATICAL MODELS
THREE DIMENSIONAL MODELS

UARS (SATELLITE)
USE UPPER ATMOSPHERE RESEARCH
SATELLITE (UARS)

UNIX (OPERATING SYSTEM)
GS COMPUTER PROGRAMS
COMPUTER SYSTEMS PROGRAMS
OPERATING SYSTEMS (COMPUTERS)
UNIX (OPERATING SYSTEM)

UPPER ATMOSPHERE RESEARCH
SATELLITE (UARS)
UF UARS (SATELLITE)
GS ARTIFICIAL SATELLITES
SCIENTIFIC SATELLITES
UPPER ATMOSPHERE RESEARCH
SATELLITE (UARS)
RT UPPER ATMOSPHERE

UREILITES
GS CELESTIAL BODIES
METEORITES
STONY METEORITES
ACHONDrites
UREILITES
CARBONACEOUS METEORITES
UREILITES
RT METEORITIC DIAMONDS

VECTOR PROCESSING (COMPUTERS)
GS DATA PROCESSING
MULTIPROCESSING (COMPUTERS)
PARALLEL PROCESSING (COMPUTERS)
PIPELINING (COMPUTERS)

VECTOR QUANTIZATION
RT CODING
DATA COMPRESSION
DIGITAL TECHNIQUES
IMAGE PROCESSING
VECTORS (MATHEMATICS)
VOICE DATA PROCESSING

VIDEO TAPE RECORDERS
GS RECORDING INSTRUMENTS
VIDEO TAPE RECORDERS
TAPE RECORDERS
VIDEO TAPE RECORDERS
VIDEO TAPE RECORDERS
RT VIDEO TAPE RECORDERS

VIDEO TAPES
RT CINEMATOGRAPHY
FILMS
INFORMATION
MAGNETIC TAPES
MOTION PICTURES
PHOTOGRAPHY
PHOTOGRAPHY
TAPES
VIDEO TAPE RECORDERS
VISUAL AIDS

VORTEX TRAPS
USE TRAPPED VORTICES

WALES
GS NATIONS
UNITED KINGDOM

WALES-(CONT.)
WALES
EUROPE

WATER SPLITTING
RT ELECTROLYSIS
HYDROGEN PRODUCTION
SPLITTING

WHESPERING GALLERY MODES
GS Modes
WHESPERING GALLERY MODES
RT ACOUSTIC FREQUENCIES
ACOUSTIC PROPAGATION
ELECTROMAGNETIC RADIATION
ELECTROMAGNETIC WAVE
TRANSMISSION
WAVE PROPAGATION
WAVELENGTHS
acoustic coupling
Advanced Launch System (STS)
Advanced Solid Rocket Motor (STS)
Advanced Very High Resolution Radiometer
aircraft, commuter
USE commuter aircraft
aligned currents, field
USE field-aligned currents
ALS (launch system)
USE Advanced Launch System (STS)
analysis, trend
USE trend analysis
Antigua and Barbuda
antimatter propulsion, matter-
USE matter-antimatter propulsion
application specific integrated circuits
Argentine space program
arms, robot
USE robot arms
arms (robotics)
USE robot arms
(alternate intelligence), knowledge bases
USE knowledge bases (artificial intelligence)
ASIC
USE application specific integrated circuits
ASRM (STS)
USE Advanced Solid Rocket Motor (STS)
Asteroid Flyby Mission, Comet Rendezvous
USE Comet Rendezvous Asteroid Flyby Mission
(astronomy), infrared cirrus
USE infrared cirrus (astronomy)
(astronomy), seeing
USE seeing (astronomy)
avnaphysics, nuclear
USE nuclear astrophysics
Atmosphere Research Satellite (UARS), Upper
USE Upper Atmosphere Research Satellite (UARS)
avmpheric
(alternate intelligent), general circulation models
USE atmospheric
atmospheric seeing
USE seeing (astronomy)
Australian space program
AVHRR
USE Advanced Very High Resolution Radiometer
Barbuda, Antigua and
USE Antigua and Barbuda
bases (artificial intelligence), knowledge
USE knowledge bases (artificial intelligence)
beamed power
USE power beaming
beaming, laser power
USE laser power beaming
beaming, microwave power
USE microwave power beaming
beaming, power
USE power beaming
beams, laser
USE laser beams
Birkeland currents
blazars
blends, polymer
USE polymer blends
block copolymers
boundary, Cretaceous-Tertiary
USE Cretaceous-Tertiary boundary
boundary detection (imagery)
USE edge detection
boundary, K-T
USE Cretaceous-Tertiary boundary
Bragg cells
breakup, orbital
USE spacecraft breakup
breakup, reentry
USE spacecraft breakup
breakup, satellite
USE spacecraft breakup
breakup, spacecraft
USE spacecraft breakup
breakup (spacecraft)
USE spacecraft breakup
brown dwarf stars
bulge, galactic
USE galactic bulge
bulge (galaxies), central
USE galactic bulge
bulge (galaxies), nuclear
USE galactic bulge
Buran space shuttle
C (programming language)
Cambrian Period
Cassini mission
cells, Bragg
USE Bragg cells
Cenozoic Era
central bulge (galaxies)
USE galactic bulge
chaos
circuits, application specific integrated
circuits, custom integrated
circulation models (atmospheric), general
cluster mission
COD (cracks)
USE crack opening displacement
Comet Rendezvous Asteroid Flyby Mission
cometary magnetospheres
commuter aircraft
compact galaxies
computational geometry
computer viruses
(computers), MPP
USE massively parallel processors
(computers), vector processing
USE vector processing (computers)
conducting polymers
(control systems), SISO
USE SISO (control systems)
copolymers, block
USE block copolymers
coupling, acoustic
USE acoustic coupling
coupling, electromagnetic
USE electromagnetic coupling
crack opening displacement
(cracks), COD
USE crack opening displacement
CRAF Mission

CRAF Mission
USE Comet Rendezvous Asteroid Flyby Mission

Cretaceous Period

Cretaceous-Tertiary boundary

crystal growth, protein
USE protein crystal growth

currents, Birkeland
USE Birkeland currents

currents, field aligned
USE field aligned currents

custom integrated circuits
USE application specific integrated circuits

cytometry
USE cytometry

Czechoslovakian space program

Deployable Reflector, Large
USE Large Deployable Reflector

detection, edge
USE edge detection

detection (imagery), boundary
USE edge detection

dimensional models, three
USE three dimensional models

dimensional models, two
USE two dimensional models

diminishing schemes, total variation
USE TVD schemes

disk operating system (DOS)
displacement, crack opening
USE crack opening displacement

Djibouti

(DOS), disk operating system
USE disk operating system (DOS)

DOS (operating system), MS
USE disk operating system (DOS)

drivers, mass
USE mass drivers

dwarf stars, brown
USE brown dwarf stars

dynamics, robot
USE robot dynamics

dynamics, rotor
USE rotor dynamics

elipsometry

Endeavour (orbiter)

engines, liquid oxygen hydrocarbon rocket
USE oxygen-hydrocarbon rocket engines

engines, LOX-hydrocarbon rocket
USE oxygen-hydrocarbon rocket engines

engines, oxygen-hydrocarbon rocket
USE oxygen-hydrocarbon rocket engines

environments, spacecraft
USE spacecraft environments

epsilon turbulence model, k-
USE k-epsilon turbulence model

epsilon turbulence model, kappa-
USE k-epsilon turbulence model

Era, Cenozoic
USE Cenozoic Era

Era, Mesozoic
USE Mesozoic Era

Era, Paleozoic
USE Paleozoic Era

events, flux transfer
USE flux transfer events

field aligned currents

films, superconducting
USE superconducting films

flight, transition
USE transition flight

flight, transition
USE transition flight

(fluids), mixing layers
USE mixing layers (fluids)

flux transfer events

Flyby Mission, Comet Rendezvous Asteroid
USE Comet Rendezvous Asteroid Flyby Mission

flyers, man tended free
USE man tended free flyers

fragmentation, satellite
USE spacecraft breakup

free flyers, man tended
USE man tended free flyers

galactic bulge

(galaxies), central bulge
USE galactic bulge

galaxies, compact
USE compact galaxies

galaxies, interacting
USE interacting galaxies

(galaxies), nuclear bulge
USE galactic bulge

galaxies, peculiar
USE peculiar galaxies

galaxies, ring
USE ring galaxies

galaxies interaction
USE interacting galaxies

gallery modes, whispering
USE whispering gallery modes

general circulation models (atmospheric)
USE atmospheric

generation (mathematics), grid
USE grid generation (mathematics)

generation (mathematics), mesh
USE grid generation (mathematics)

geometry, computational
USE computational geometry

global warming

grating, echelle
USE echelle grating

graupel

Grenada

grid generation (mathematics)
growth, protein crystal
USE protein crystal growth

hairpin vortices
USE horseshoe vortices

helicopters, light
USE light helicopters

Heliospheric Observatory, Solar and
USE SOHO Mission

heliotrons

High Resolution Radiometer, Advanced Very
USE Advanced Very High Resolution Radiometer

holes (mechanics)

horizontal shear waves
USE SH waves

horizontally polarized shear waves
USE SH waves

horseshoe vortices

Hungarian space program

hydrocarbon rocket engines, liquid oxygen
USE oxygen-hydrocarbon rocket engines

hydrocarbon rocket engines, LOX-
USE oxygen-hydrocarbon rocket engines

hydrocarbon rocket engines, oxygen-
USE oxygen-hydrocarbon rocket engines

ice clouds

(imagery), boundary detection
USE edge detection

infrared cirrus (astronomy)

input single output systems, single
USE SISO (control systems)

insulator superconductors, superconductor
USE SIS (semiconductors)
integrated circuits, application specific
USE application specific integrated circuits

integrated circuits, custom
USE application specific integrated circuits

intelligence), knowledge bases (artificial intelligence)
USE knowledge bases (artificial intelligence)

interacting galaxies

interaction, galaxy
USE interacting galaxies

Ireland, Northern
USE Northern Ireland

Iron meteorites, stony
USE stony-iron meteorites

Israel space program

k-epsilon turbulence model

K-T boundary
USE Cretaceous-Tertiary boundary

kappa-epsilon turbulence model
USE k-epsilon turbulence model

knowledge bases (artificial intelligence)

language), C (programming language)
USE C (programming language)

Large Deployable Reflector

laser beams

laser power beaming
USE laser power beaming

(lasers), power transmission
USE laser power beaming

(launch system), ALS
USE Advanced Launch System (STS)

Launch System (STS), Advanced
USE Advanced Launch System (STS)

to天气s (fluids), mixing
USE mixing layers (fluids)

LDR (telescope)
USE Large Deployable Reflector

learning, machine
USE machine learning

learning machines
USE machine learning

light helicopters

liquid oxygen hydrocarbon rocket engines
USE oxygen-hydrocarbon rocket engines

LOX-hydrocarbon rocket engines
USE oxygen-hydrocarbon rocket engines

Luxembourg space program

machine learning

magneto spheres, cometary
USE cometary magnetospheres

magnetospheres, pulsar
USE pulsar magnetospheres

magnetospheres, stellar
USE stellar magnetospheres

man tended free flyers

management, records
USE records management

Mapping Spectrometer, Total Ozone
USE Total Ozone Mapping Spectrometer

Mars Rover Sample Return Mission
USE Mars sample return missions

Mars sample return missions

maser materials

maser pumping

mass drivers

massively parallel processors

materials, maser
USE maser materials

materials, optical
USE optical materials

(materials), phase separation
USE phase separation (materials)

(mathematics), grid generation
USE grid generation (mathematics)

(mathematics), mesh generation
USE grid generation (mathematics)

matter-antimatter propulsion

Mauritius

(mechanics), holes
USE holes (mechanics)

mesh generation (mathematics)
USE grid generation (mathematics)

Mesozoic Era

meteorites, stony-iron
USE stony-iron meteorites

methods, multigrid
USE multigrid methods

Mexican space program

microscopy, scanning tunneling
USE scanning tunneling microscopy

microwave power beaming
USE microwave power beaming

(microwave), power transmission
USE microwave power beaming

microwave signatures

mission, Cassini
USE Cassini mission

Mission, Cluster
USE Cluster Mission

Mission, Comet Rendezvous Asteroid Flyby
USE Comet Rendezvous Asteroid Flyby Mission

Mission, CRAFT
USE Comet Rendezvous Asteroid Flyby Mission

Mission, Mars Rover Sample Return
USE Mars sample return missions

motor (STS), Advanced Solid Rocket Motor (STS)
USE Advanced Solid Rocket Motor (STS)

MPP (computers)
USE massively parallel processors

MS DOS (operating system)
USE disk operating system (DOS)

MTFF (space station)
USE man tended free flyers

multigrid methods

Neptune satellites

Nereid

Netherlands space program

New Zealand space program

noise, propeller
USE propeller noise

Northern Ireland

nuclear astrophysics

nuclear bulge (galaxies)
USE galactic bulge

Oberovatory, Solar and Heliospheric
USE SOHO Mission

oligomers

opening displacement, crack
USE crack opening displacement

operating system (DOS), disk
USE disk operating system (DOS)

(operating system), MS DOS
USE disk operating system (DOS)
(operating system), UNIX
USE UNIX (operating system)

optical materials

orbital breakup
USE spacecraft breakup

(orbit), Endeavour
USE Endeavour (orbit)

output systems, single input single output (SISO control systems)
USE SISO control systems

oxygen-hydrocarbon rocket engines, liquid
USE oxygen-hydrocarbon rocket engines

oxygen-hydrocarbon rocket engines
USE oxygen-hydrocarbon rocket engines

Ozone Mapping Spectrometer, Total Ozone Mapping Spectrometer
USE Total Ozone Mapping Spectrometer

pairs, electron-positron
USE electron-positron pairs

Pakistan space program

Paleozoic Era

PAN (polyacrylonitrile)
USE polyacrylonitrile

parallel processors, massively parallel
USE massively parallel processors

peculiar galaxies

Period, Cambrian
USE Cambrian Period

Period, Cretaceous
USE Cretaceous Period

Period, Tertiary
USE Tertiary Period

phase separation (materials)

plasmas, electron-positron
USE electron-positron plasmas

polarized shear waves, horizontally polarized
USE SH waves

polyacrylonitrile
USE polyacrylonitrile

(polyacrylonitrile), PAN
USE polyacrylonitrile

polyblends
USE polymer blends

polymer blends

polymers, conducting
USE conducting polymers

positron pairs, electron-positron
USE electron-positron pairs

positron plasmas, electron-positron
USE electron-positron plasmas

power, beamed
USE power beaming

power beaming

power beaming, laser
USE laser power beaming

power beaming, microwave
USE microwave power beaming

power transmission (lasers)
USE laser power beaming

power transmission (microwave)
USE microwave power beaming

power transmission, satellite
USE satellite power transmission

processing (computers), vector
USE vector processing (computers)

processors, massively parallel
USE massively parallel processors

program, Argentine space
USE Argentine space program

program, Australian space
USE Australian space program

program, Czechoslovakian space
USE Czechoslovakian space program

program, Hungarian space
USE Hungarian space program

program, Israeli space
USE Israeli space program

program, Luxembourg space
USE Luxembourg space program

program, Mexican space
USE Mexican space program

program, Netherlands space
USE Netherlands space program

program, New Zealand space
USE New Zealand space program

program, Pakistan space
USE Pakistan space program

program, Spanish space
USE Spanish space program

(programming language), C
USE C (programming language)

programming, structured
USE structured programming

propeller noise
USE propeller noise

propulsion, matter-antimatter
USE matter-antimatter propulsion

protein crystal growth
USE protein crystal growth

pulsar magnetospheres
USE pulsar magnetospheres

pumping, maser
USE maser pumping

Q

Qatar

quakes, star
USE starquakes

quantization, vector
USE vector quantization

R

Radiometer, Advanced Very High Resolution
USE Advanced Very High Resolution Radiometer

recorders, video tape
USE video tape recorders

records management
USE spacecraft breakup

Reentry breakup
USE spacecraft breakup

Rendezvous Asteroid Flyby Mission, Comet
USE Comet Rendezvous Asteroid Flyby Mission

Research Satellite (UARS), Upper Atmosphere
USE Upper Atmosphere Research Satellite (UARS)

Resolution Radiometer, Advanced Very High Resolution
USE Advanced Very High Resolution Radiometer

resonance tunneling
USE resonant tunneling

resonant tunneling

Return Mission, Mars Rover Sample
USE Mars sample return missions

return missions, Mars sample
USE Mars sample return missions

rhodamine

riblets

ring galaxies

robot arms

robot dynamics

robot motion
USE robot dynamics

robot sensors

(robots), arms
USE robot arms

rocket engines, liquid oxygen hydrocarbon
USE oxygen-hydrocarbon rocket engines

rocket engines, LOX-hydrocarbon
USE oxygen-hydrocarbon rocket engines

rocket engines, oxygen-hydrocarbon
USE oxygen-hydrocarbon rocket engines

Rocket Motor (STS), Advanced Solid
USE Advanced Solid Rocket Motor (STS)

rotational spectra

rotor dynamics

rotordynamics
USE rotor dynamics

Rover Sample Return Mission, Mars
USE Mars sample return missions

S

Sample Return Mission, Mars
USE Mars sample return missions

sample return missions, Mars
USE Mars sample return missions

satellite breakup
USE spacecraft breakup

satellite fragmentation
USE spacecraft breakup

satellite power transmission

(satellite), UARS
USE Upper Atmosphere Research Satellite (UARS)

Satellite (UARS), Upper Atmosphere Research
USE Upper Atmosphere Research Satellite (UARS)

satellites, Neptune
USE Neptune satellites
scanning tunneling microscopy

schemes, total variation diminishing
USE TVD schemes

schemes, TVD
USE TVD schemes

Schlichting waves, Tollmien-
USE Tollmien-Schlichting waves

seeing (astronomy)
USE seeing (astronomy)

(semi)conductors, SIS
USE SIS (semiconductors)

sensors, robot
USE robot sensors

separation (materials), phase
USE phase separation (materials)

Seychelles

SH waves

shear waves, horizontal
USE SH waves

shear waves, horizontally polarized
USE SH waves

shell stars

shuttle, Buran space
USE Buran space shuttle

signatures, microwave
USE microwave signatures

single input single output systems
USE SISO (control systems)

single output systems, single input
USE SISO (control systems)

SIS (semiconductors)

SISO (control systems)

SOHO Mission

Solar and Heliospheric Observatory
USE SOHO Mission

Solid Rocket Motor (STS), Advanced
USE Advanced Solid Rocket Motor (STS)

space program, Argentine
USE Argentine space program

space program, Australian
USE Australian space program

space program, Czechoslovakian
USE Czechoslovakian space program

space program, Hungarian
USE Hungarian space program

space program, Israeli
USE Israeli space program

space program, Luxembourg
USE Luxembourg space program

space program, Mexican
USE Mexican space program

space program, Netherlands
USE Netherlands space program

space program, New Zealand
USE New Zealand space program

space program, Pakistan
USE Pakistan space program

space program, Spanish
USE Spanish space program

space shuttle, Buran
USE Buran space shuttle

(space station), M1TFF
USE man tended free flyers

(spacecraft), breakup
USE spacecraft breakup

spacecraft breakup

spacecraft environments

Spanish space program

specific integrated circuits, application
USE application specific integrated circuits

spectra, rotational
USE rotational spectra

Spectrometer, Total Ozone Mapping
USE Total Ozone Mapping Spectrometer

splitting, water
USE water splitting

stargazes

stars, brown dwarf
USE brown dwarf stars

stars, shell
USE shell stars

stars, triple
USE triple stars

station), M1TFF (space
USE man tended free flyers

stellar magnetospheres

stony-iron meteorites

stratospheric warming

structured programming

(STS), Advanced Launch System
USE Advanced Launch System (STS)

(STS), Advanced Solid Rocket Motor
USE Advanced Solid Rocket Motor (STS)

(STS), ASRM
USE Advanced Solid Rocket Motor (STS)

superconducting films

superconductor insulator superconductors
USE SIS (semiconductors)

superconductors, superconductor insulator
USE SIS (semiconductors)

system), ALS (launch
USE Advanced Launch System (STS)

system (DOS), disk operating
USE disk operating system (DOS)

system), MS DOS (operating
USE disk operating system (DOS)

System (STS), Advanced Launch
USE Advanced Launch System (STS)

system), UNIX (operating
USE UNIX (operating system)

systems, single input single output
USE SISO (control systems)

systems), SISO (control
USE SISO (control systems)

UARS (satellite)

T

T boundary, Cretaceous-Tertiary
USE Cretaceous-Tertiary boundary

tape recorders, video
USE video tape recorders

tapes, video
USE video tapes

(telescope), LDR
USE Large Deployable Reflector

tended free flyers, man
USE man tended free flyers

Tertiary boundary, Cretaceous-
USE Cretaceous-Tertiary Boundary

Tertiary Period

three dimensional models

Tollmien-Schlichting waves

TOMS
USE Total Ozone Mapping Spectrometer

Total Ozone Mapping Spectrometer

total variation diminishing schemes
USE TVD schemes

transfer events, flux
USE flux transfer events

transition flight
USE transition flight

transition flight

transmission (lasers), power
USE laser power beaming

transmission (microwave), power
USE microwave power beaming

transmission, satellite power
USE satellite power transmission

transputers

trapped vortices

traps, vortex
USE trapped vortices

trend analysis

triple stars

tunneling microscopy, scanning
USE scanning tunneling microscopy

tunneling, resonance
USE resonant tunneling

tunneling, resonant
USE resonant tunneling

turbulence model, k-epsilon
USE k-epsilon turbulence model

turbulence model, kappa-epsilon
USE k-epsilon turbulence model

turbulence models

TVD schemes

two dimensional models

U

UARS (satellite)
USE Upper Atmosphere Research Satellite (UARS)
(UARS), Upper Atmosphere Research Satellite

USE Upper Atmosphere Research Satellite (UARS)

UNIX (operating system)

Upper Atmosphere Research Satellite (UARS)

ureilites

V

variation diminishing schemes, total
USE TVD schemes

vector processing (computers)

vector quantization

Very High Resolution Radiometer, Advanced
USE Advanced Very High Resolution Radiometer

video tape recorders

video tapes

viruses, computer
USE computer viruses

evortex traps
USE trapped vortices

vortices, hairpin
USE horseshoe vortices

vortices, horseshoe
USE horseshoe vortices

vortices, trapped
USE trapped vortices

W

Wales

warming, global
USE global warming

warming, stratospheric
USE stratospheric warming

water splitting

waves, horizontal shear
USE SH waves

waves, horizontally polarized shear
USE SH waves

waves, SH
USE SH waves

waves, Tollmien-Schlichting
USE Tollmien-Schlichting waves

whispering gallery modes

Z

Zealand space program, New
USE New Zealand space program
A

- **abundance**
The mean concentration of an element in a geochemical reservoir, e.g., the abundance of Ni in meteorites or the crustal abundance of oxygen. Also used for the relative average content, e.g., the order of abundance of elements in the earth's crust is O, Si, Al, Fe, Ca, etc. Used for element abundance.

**AC generators**
Generators for the production of alternating-current power. Used for alternating current generators and alternators (generators).

**access control**
Hardware or software features, operating procedures, or management procedures designed to permit authorized access to a computer system.

- **adobe flats**
Use flats (landforms)

- **advancing shorelines**
Use beaches

**air data systems**
Sets of aerodynamic and thermodynamic sensors, and a computer which provide flight parameters such as airspeed, static pressure, air temperature and Mach number.

- **air masses**
Large widespread volumes of air having particular characteristics of temperature and moisture content that were acquired at its source region and are modified as they move away from their source.

- **air pollution**
The presence of unwanted material in the air. The term 'unwanted material' here refers to material in sufficient concentrations, present for a sufficient time, and under circumstances to interfere significantly with comfort, health, or welfare of persons, or with the full use and enjoyment of property. Used for atmospheric impurities.

**Alfven waves**
Use magneto-hydrodynamic waves

- **algae**
Any plants of a group of unicellular and multicellular primitive organisms that include the Chlorella, Scenedesmus, and other genera. Used for algal bloom.

- **algae**
Use algae

- **alloys**
Substances having metallic properties and being composed of two or more chemical elements of which at least one is an elemental metal.

**alphanumeric characters**
Characters in a set that contain both letters and digits, but they usually also contain other characters such as punctuation symbols.

- **alternating current generators**
Use AC generators

- **alternators (generators)**
Use AC generators

**anechoic chambers**
Enclosures especially designed with boundaries that absorb sufficiently well the sound incident thereon to create an essentially field-free condition in the frequency ranges of interest.

**angels (radar)**
Echos of false radar targets caused by atmospheric inhomogeneity, atmospheric refraction, insects, birds, or unknown phenomena.

- **anodes**
The positive poles or electrodes of electron emitters, such as electron tubes or electric cells.

- **Antarctic regions**
The areas surrounding and including the continent of Antarctica. Used for Antarctica.

- **Antarctica**
Use Antarctic regions

**anthracite**
Coal of the highest metamorphic rank, in which fixed-carbon content is between 92% and 96% (on a dry, mineral-matter-free basis). It is hard and black, and has a semimetallic luster and semiconchoidal fracture. Anthracite ignites with difficulty and burns with a short blue flame, without smoke. Used for hard coal.

**antireflection coatings**
Thin dielectric or metallic films applied to an optical surface to reduce the reflectance and thereby increase the transmittance. Note: The ideal value of the reactive index of a single layered film is the square root of the product of the refractive indices on either side of the film, the ideal optical thickness being one quarter of a wavelength.
apogees
Those orbital points farthest from the earth, when the earth is the center of attraction. IEEE 1968

* aquatic plants
Plants growing in or on water. 1981

* archipelagoes
Seas or areas in seas that contain numerous islands; also the island groups themselves. AGI 1973

* aspiration
Use vacuum

* astrophysics
A branch of astronomy that treats of the physical properties of celestial bodies, such as luminosity, size, mass, density, temperature, and chemical composition. Used for geoastronomy. SP-7 1968

* atmospheric electricity
Electrical phenomena, regarded collectively, which occur in the earth’s atmosphere. Also the study of electrical processes occurring within the atmosphere. SP-7 1968

* atmospheric impurities
Use air pollution

* atmospheric refraction
Refraction resulting when a ray of radiant energy passes obliquely through an atmosphere. SP-7 1968

* atmospheric windows
Wavelength intervals at which the atmosphere transmits the most electromagnetic radiation. AGI 1972

* atolls
Coral reefs appearing in plan view as roughly circular (though sometimes elliptical or horseshoe-shaped), and surmounted by a chain or ring of closely spaced low coral inlets that encircle a shallow lagoon in which there is no pre-existing land or islands of non coral origin; the reefs are surrounded by deep water of the open sea, either oceanic or continental shelves. Atolls range in diameter from 1 km to more than 130 km, and are especially common today in the western and central Pacific Ocean. Atoll is derived from the native name in the Maldivian Islands (Indian Ocean) which are typical examples of this structure. AGI 1973

audiometry
The testing and measurement of hearing at various levels. 1968

automatic pattern recognition
Use pattern recognition

* azimuth
Horizontal direction or bearing. Used for solar azimuth. SP-7 1968

backfire antennas
Antennas consisting of radiating feeds, reflector elements, and reflecting surfaces such that the antennas function as open resonators, with radiation from the open end of the resonator. IEEE 1968

backlobes
Radiation lobes whose axes make angles of approximately 180 degrees with respect to the axes of the major lobes of the antennas. By extension radiation lobes in the half-space opposed to the direction of peak activity. IEEE 1968

* backshores
Use beaches

* badlands
Intricately stream-dissected topography, characterized by a very fine drainage network with high drainage densities (77 to 747 miles per square mile) and short steep slopes with narrow interflues. Badlands develop on the surface with little or no vegetative cover, overlying unconsolidated or poorly cemented clays or silts, sometimes with soluble minerals such as gypsum or halite. They may also be induced in humid areas by removal of the vegetative cover through overgrazing, or by air pollution from sulfide smelting. The term was first applied to an area in western South Dakota, which was called ‘mauvaises terres’ by the early French fur traders. AGI 1979

* bajadas
Use fans (landforms)

* barriers (landforms)
Elongated offshore ridges or masses, usually of sand, rising above the high-tide level, generally extending parallel to, and at some distance from, the shore, and separated from it by some kind of coastal bay. They are built up by the action of waves and currents. AGI 1972

* bars (landforms)
A generic term for any of various elongate offshore ridges, banks, or mounds of sand, gravel, or other unconsolidated material, submerged at least at high tides, and built up by the action of waves or currents on the water bottom, especially at the mouth of a river or estuary, or at a slight distance from the beach. Bars commonly form obstructions to water navigation. AGI 1973

* bayous
A term variously applied to many local water features in the lower Mississippi River basin and in the Gulf Coast region of the U.S., especially in Louisiana. Its general meaning is a creek of a secondary watercourse that is tributary to another body of water; especially through alluvial lowlands, coastal swamps or river deltas. The origin of the term is from the American French ‘boyaux’, ‘gut’; from the Choctaw ‘bayuk’, ‘small stream’. AGI 1974

* bays (topographic features)
Wide, curving open indentations, recesses, or arms of seas or lakes into the land or between two capes or headlands; larger than coves, and usually smaller than, but of the same general character as gulfs. Used for bights and coves. AGI 1968

* beaches
Stretches of unconsolidated material that constitute gently sloping zones, typically with concave profiles, extending landward from the low-water line to the place where there is a definite change in material or physiographic form. Used for advancing shorelines, backshores, and inshore zones. AGI 1968

* beacons
Lights, groups of lights, electronic apparatus, or other devices that guide, orient, or warn aircraft, spacecraft, etc. in flight. SP-7 1968
NASA THESAURUS SUPPLEMENT (PART 3)

- **bights**
  Use bays (topographic features)

- **bioregenerative life support systems**
  Use closed ecological systems

- **blazars**
  Strongly optical polarized active galactic nuclei objects exhibiting BL Lacertae-like and quasar-like characteristics.

- **bonding**
  Specifically, a system of connections between all metal parts of an aircraft or other structure forming a continuous electrical unit and preventing jumping or arching of static electricity. Glueing or cementing together for structural strength.

- **breakwaters**
  Offshore structures (such as moles, walls, or jetties) that by breaking the force of waves, protect harbors, anchorages, beaches, or shore areas. Used for jetties and sea walls.

**C**

- **cathodes**
  In electron tubes, electrodes through which a primary stream of electrons enters the interelectrode space.

- **celestial bodies**
  Any aggregations of matter in space constituting a unit for astronomical study, as the sun, moon, a planet, comet, star, or nebula. Also called heavenly bodies.

- **central processing units**
  The units of computing systems that include the circuits controlling the interpretation of instructions and their execution. Used for processors (computers).

- **ceramics**
  Inorganic compounds or mixtures requiring heat treatment to fuse them into homogeneous masses usually possessing high temperature strength but low ductility. Types and uses range from china for dishes to refractory liners for nozzles.

- **Chlorella**
  A genus of unicellular green algae to be adapted to converting carbon dioxide into oxygen in a closed ecological system.

- **circuits**
  Networks providing one or more closed paths. Used for electric circuits, exploding conductor circuits, shunts, and subcircuits.

- **closed ecological systems**
  Systems that provide for the maintenance of life in an isolated living chamber through complete reutilization of the material available, in particular, by means of a cycle wherein exhaled carbon dioxide, urine, and other waste matter are converted chemically or by photosynthesis into oxygen, water, and food. Used for bioregenerative life support systems.

- **coal**
  A brown to black combustable sedimentary rock (in the geological sense) composed principally of consolidated and chemically altered plant remains.

**D**

- **ditching (excavation)**
  Use excavation

- **COD (cracks)**
  Use crack opening displacement

- **cold cathode tubes**
  Electron tubes containing cold cathodes.

- **cold cathodes**
  Cathodes that function without the application of heat.

- **cols**
  Use gaps (geology)

- **communication satellites**
  Satellites designed to reflect or relay electromagnetic signals used for communication.

- **compasses**
  Instruments for indicating a horizontal reference direction, specifically magnetic compasses.

- **continental margins**
  Use continental shelves

- **continental shelves**
  The ocean floor that is between the shoreline and the abyssal ocean floor, including various provinces; the continental shelf; continental borderland; continental slope; and the continental rise. Used for continental margins.

- **coves**
  Use bays (topographic features)

- **crack opening displacement**
  The displacement at the mouth of a crack in a material. Used for COD (cracks).

- **critical mach number**
  Use Mach number

- **discharge tubes**
  Use gas discharge tubes

- **discovery**
  A break in sequence or continuity of anything.

- **discovering**
  Use exploration

- **disk operating system (DOS)**
  A program with which the computer performs such mundane but useful tasks as storing, locating, and retrieving files on disk, reading the keyboard, and issuing display and print information.

- **displacement**
  A vector quantity that specifies the change of position of a body the change of position of a body or particle usually measured from the mean position or position of rest.

- **ditching (excavation)**
  Use excavation
DOPPLER EFFECT

- Doppler effect
  The change in frequency with which energy reaches a receiver when the receiver and the energy source are in motion relative to each other. Used for DOVAP and stellar Doppler shift.  
  SP-7 1968

Doppler radar
Radar which utilizes the Doppler effect to determine the radial component of velocities of relative radar targets or to select targets having particular radial velocities.  
IEEE 1968

- DOVAP
  Use Doppler effect

- drag
  A retarding force acting upon the direction of motion of the body, it is a component of the total fluid forces acting on the body. Used for drag effect.  
  SP-7 1968

- drag effect
  Use drag

- dullness
  Use luster

E

- earth figure
  Use geodesy

- earth shape
  Use geodesy

- eddies
  Use vortices

- electric circuits
  Use circuits

electrical conductivity
Use electrical resistivity

electrical resistivity
A factor such that the conduction-current density is equal to the electric field in the material divided by resistivity.  
IEEE 1968

- electroacoustic transducers
  Transducers for receiving waves from an electric system and delivering waves to an acoustic system, or vice versa. Microphones and earphones are electroacoustic transducers.  
  SP-7 1968

electroconductivity
Use electrical resistivity

- electrodes
  Terminals at which electricity passes from one medium into another. The positive electrodes are called the anodes; the negative electrodes are called the cathodes.  
  SP-7 1968

NASA THESaurus SUPPLEMENT (PART 3)

- electromagnetic radiation
  Energy propagated through space or through material media in the form of an advancing disturbance in electric and magnetic fields existing in space or in media. The term radiation, alone, is used commonly for this type of energy, although it actually has a broader meaning. Used for electromagnetic waves and wave radiation.  
  SP-7 1968

- electromagnetic waves
  Use electromagnetic radiation

- electron tubes
  Devices in which conduction by electrons takes place through a vacuum of gaseous medium within a gastight envelope.  
  SP-7 1968

- element abundance
  Use abundance

energy dissipation
The difference between energy input and output as a result of transfer of energy between two points. Used for energy loss.  
IEEE 1968

energy loss
Use energy dissipation

equatorial orbits
Inclined orbits with an inclination of zero degrees. The plane of an equatorial orbit contains the equator of the primary body.  
IEEE 1968

- erosion
  Progressive loss of original material from a solid surface due to mechanical interaction between that surface and a fluid, a multicomponent fluid, or impinging liquid or solid particles. Used for scars (geology).  
  ASTM (G 76, G-2) 1968

error correcting codes
Codes in which each telegraph or data signal conforms to specific rules of construction so that departures from this construction in the received signals can be automatically detected, and permits the automatic correction, at the received terminal, of some or all of the errors. Note: Such codes require more signal elements than are necessary to convey the basic information.  
IEEE 1974

error detection codes
Codes in which each expression conforms to specific rules of construction, so that if certain errors occur in an expression the resulting expression will not conform to the rules of construction and thus the presence of errors is detected. Note: Such codes require more signal elements than are necessary to convey the fundamental information.  
IEEE 1968

- escarpments
  Long more or less continuous cliffs or relatively steep slopes facing in one general direction, breaking the continuity of the land by separating two level or gently sloping surfaces, and produced by erosion or by faulting. Used for scarp.  
  AGI 1972

- eutrophication
  The process by which waters become more eutrophic; especially the artificial or natural enrichment of a lake by an influx of nutrients required for the growth of aquatic plants such as algae that are vital for fish and animal life.  
  AGI 1973

- evaporation

The physical process by which a liquid or solid is transformed into the gaseous state; the opposite of **condensation**. 

**evapotranspiration**
Loss of **water** from a land area through **transpiration** of plants and **evaporation** from the soil and surface-water bodies. Also, the volume of **water** lost through evapotranspiration.  

**excavation**
The act or process of removing soil and/or rock materials from one location and transporting them to another. It includes digging, blasting, breaking, loading, and hauling, either at the surface or underground. Also, a pit, cavity, hole, or other uncovered cutting produced by excavation or the material dug out in making a channel or cavity. Used for ditching (excavation)  

**expert systems**
Computer programs that manipulate symbolic **information** to produce the same results as human experts would. They deal with uncertain data and make decisions on that data. Input and design relies on human experts. Used for knowledge based systems. 

**exploding conductor circuits**
Use circuits  

**exploration**
The search for deposits of useful **minerals** or **fossil fuels**; prospecting, including under the oceans. It may include geologic reconnaissance, e.g. **remote sensing**, photogeology, geophysical and geochemical methods, and both surface and underground investigations. Used for discovering and prospecting.  

**fans (landforms)**
Gently sloping, fan-shaped masses of detritus forming sections of very low shaped **cones** commonly at places where there is a notable decrease in gradient; specifically alluvial fans. Also fan-shaped masses of congealed **lava** that formed on steep slopes by the continual changing direction of **flow**. Used for bajadas.  

**FDMA**
Use **frequency division multiple access** 

**feature extraction**
Use pattern recognition  

**field aligned currents**
Electric currents aligned along **magnetic fields**.  

**finite-state machines**
Use Turing machines  

**flats (landforms)**
A general term for level or nearly level surfaces or small areas of land marked by little or no relief such as plains. Also, nearly level regions that visibly display lower relief than their surroundings. Used for adobe flats and salt flats.  

**flood control**
The prevention or reduction of damage caused by flooding, as by containing **water** in reservoirs removed from areas where it would do damage, improving channel capacity to convey **water** past or through critical areas with the least amount of damage, and diverting excess **water** into bypasses or floodways. 

**flood plains**
The surfaces or strips of relatively smooth land adjacent to river channels, constructed by the present rivers in their existing regimens and covered with **water** when the rivers overflows. 

**floods**
Rising bodies of **water** (as in streams, lakes, or seas, or behind dams) that overtop their natural or artificial confines and that cover land not normally underwater. Especially, any relatively high streamflows that overflow their banks in any reach of the stream, or that are measured by gage **height** of discharge quantity.  

**fluid transpiration**
Use **transpiration**  

**folds (geology)**
Curves or bends of a planar structure such as rock strata, bedding planes, foliation, or cleavage. Folds are usually a product of **deformation**, although their definition is descriptive and not genetic and may include primary structures. Used for nappes.  

**fossil fuels**
A general term for any hydrocarbons that may be used for fuel; chiefly petroleum, natural gas, and **coal**.  

**free electrons**
Electrons which are not bound to an atom.  

**frequency division multiple access**
A method of providing **multiple access** to **communication satellites** in which the transmissions from a particular earth station occupy a particular assigned frequency band. In the satellite the signals are simultaneously amplified and transposed to a different frequency band and retransmitted. The earth station identifies its receiving channel according to its assigned frequency band in the satellite signal. Used for FDMA.  

**frequency ranges**
Specifically designated parts of the frequency spectrum.  

**frontal areas (meteorology)**
Use **fronts (meteorology)**  

**fronts (meteorology)**
The contacts at the Earth's surface between two different air **masses** commonly cold and warm, that generally move in an easterly direction. Used for **frontal areas (meteorology)** and weather fronts.  

**gaps (geology)**
Ravines or gorges cut deeply through a mountain ridge, or between hills or mountains. Used for cols and passes.  

**gas discharge counters**
Use gas discharge tubes
GAS DISCHARGE TUBES

gas discharge tubes
Evacuated enclosures containing a gas at low pressure that permits the passage of electricity through the gas upon application of sufficient voltage. Note: The tubes are usually provided with metal electrodes, but one form permits an electrodeless discharge with induced voltage. Used for discharge tubes and gas discharge counters.

- geoastrophysics
  Use astrophysics

- geoastrophysics
  Use geophysics

- geochemistry
  The study of the distribution of the amounts of the chemical elements in minerals, ores, rocks, soils, water, and the atmosphere. Also, the study of the circulation of the elements in nature, on the basis of the properties of the atom and ions. A major concern of geochemistry is the synoptic evaluation of the abundance of the elements of the Earth's crust and in major classes of rocks and minerals.

- geochronology
  The study of time in relationship to the history of the Earth, especially by the absolute age determination and relative dating systems developed for this purpose.

- geodesy
  The science which deals mathematically with the size and shape of the earth, and the earth's external gravity field, and with surveys of such precision that overall size and shape of the earth must be taken into consideration. Used for earth figure, earth shape, and Izsak ellipsoid.

- Geodimeters
  Trade name of electronic-optical devices that measure ground distances precisely by electronic timing and phase comparison of modulated light waves that travel from a master unit to a reflector and return to a light-sensitive tube where an electric current is set up. They are normally used at night and are effective with first-order accuracy up to distances or 5-40 km (3-25 miles). The term is derived from GEO detic DI stance METER.

- geoelectricity
  The Earth's natural electric fields and phenomena. It is closely related to geomagnetism.

- geomagnetic field
  Use geomagnetism

- geomagnetism
  The magnetic phenomena, collectively considered, exhibited by the earth and its atmosphere and by extension the magnetic phenomena in interplanetary space. The study of the magnetic field of the earth. Used for geomagnetic field and terrestrial magnetism.

- geophysics
  The physics of the earth and it environment, i.e., earth, air, and (by extension) space. Classically, geophysics is concerned with the nature of and physical occurrences at and below the surface of the earth including, therefore, geology, oceanography, geodesy, seismology, and hydrology. The trend is to extend the scope of geophysics to include meteorology, geomagnetism, astrophysics, and other sciences concerned with the physical nature of the universe. Used for geoastrophysics.
**ions**
Charged atoms or molecularly bound groups of atoms; sometimes also free electrons or other charged subatomic particles. In atmospheric electricity, any of several types of electrically charged submicroscopic particles normally found in the atmosphere. Atmospheric ions are of two principal types, small ions and large ions, although a class of intermediate ions has occasionally been reported. In chemistry, atoms or specific groupings of atoms which have gained or lost one or more electrons, as the chloride ion or ammonium ion. Such ions exist in aqueous solutions and in certain crystal structures. SP-7 1968

**islands**
Tracts of land smaller than a continent, surrounded by the water of oceans, seas, lakes, or streams. The term has been loosely applied to land-tied and submerged areas, and to land cut off on two or more sides by water, such as peninsulas. AGI 1968

**Izsak ellipsoid**
Use geodesy

**jetties**
Use breakwaters

**klippen**
Use outliers (landforms)

**knowledge based systems**
Use expert systems

**lakes**
Inland bodies of standing water occupying depressions in the Earth's surface, generally of appreciable size (larger than a pond) and too deep to permit vegetation (excluding sub aqueous vegetation) to take root completely across the expanse of water; the water may be fresh or saline. The term includes expanded parts of rivers, reservoirs behind dams, or lake basins intermittently or formerly covered by water. AGI 1968

**laminated materials**
Use laminates

**laminates**
Products made by bonding together two or more layers of material or materials. Used for laminated materials, laminations, and multilayer structures. ASTM (C 582, C-3) 1968

**laminations**
Use laminates

**lava**
A general term for a molten extrusive; also, for the rock that is solidified from it. DOE 1968

**LED (diodes)**
Use light emitting diodes

**light emitting diodes**
PN junction semiconductor devices that emit incoherent optical radiation when biased in the forward direction. Used for LED (diodes). IEEE 1971

**luster**
The appearance characteristic of a specimen due to pronounced changes in intensity of light reflected from elemental areas of the specimen when the angle of illumination or view is changed. Used for dullness. ASTM (E 284, E-12) 1968

**Mach number**
A number expressing the ratio of the speed of a body or a point on a body with respect to the surrounding air or other fluid, or the speed of a flow, to the speed of sound in the medium; the speed represented by this number. Used for critical Mach number and Glauert coefficient. SP-7 1968

**macromolecules**
Use molecules

**magnetic field intensity**
Use magnetic flux

**magnetic fields**
Regions of space wherein magnetic dipoles would experience a magnetic force or torque; often represented as the geometric array of the imaginary magnetic lines of force that exist in relation to magnetic poles. SP-7 1968

**magnetic flux**
The magnetic force exerted on an imaginary unit magnetic pole placed at any specified point of space. It is a vector quantity. Its direction is taken as the direction toward which a north magnetic pole would tend to move under the influence of the field. If the force is measured in dynes and the unit pole is a cgs unit pole, the field intensity is given in oersteds. Used for magnetic field intensity. SP-7 1968

**magnetic poles**
Either of the two places on the surface of the earth where the magnetic dip is 90 deg., that in the Northern Hemisphere (at, approximately, latitude 73 deg. 8 N, longitude 101 deg. W in 1955) being designated north magnetic pole, and that in the Southern Hemisphere (at, approximately, latitude, 68 deg. S, longitude 144 deg. E in 1955) being designated south magnetic pole. Either of those two points of a magnet where the magnetic force is the greatest. In magnetic theory, a fictitious entity analogous to a unit charge of electrostatic theory, in nature only dipoles, not isolate magnetic poles exist. SP-7 1968

**magnetohydrodynamic waves**
Low frequency waves in an electrically highly conducting fluid (such as a plasma) permeated by static magnetic fields. The restoring forces of the waves are, in general, the combination of a magnetic tensile stress along the magnetic field lines and the comprehensive stress between the field lines and the fluid pressure. Used for Alfven waves, hydromagnetic waves, and plasma sound waves. IEEE 1968

**man tended free flyers**
Intermittently manned spacecraft or platforms designed primarily to carry out experiments in reduced gravity and life science.
MASS DRIVERS

research. They also serve as annexes or components of space stations. Used for MTTF (space station). 1989

mass drivers
Electromagnetic devices for the linear acceleration of projectiles or payloads. Applications include orbital insertion and transfer, propulsion systems, and hypervelocity accelerators. 1978

matter-antimatter propulsion
Spacecraft propulsion by use of matter-antimatter annihilation reactions. 1988

• microphones
Electroacoustic transducers which receive acoustic signals and deliver corresponding electric signals. SP-7 1968

• minerals
Naturally occurring inorganic elements or compounds having an orderly internal structure and characteristic chemical compositions, crystal forms, and physical properties. AGI 1968

minimization
Use optimization

mixing layers (fluids)
Fluid layers in which multicomponent mixing occurs. 1988

• molecular flow
The flow of gas through a duct under conditions such that the mean free path is greater than the largest dimension of a transverse section of the duct. SP-7 1968

• molecular weight
The weight of a given molecule expressed in atomic weight units. SP-7 1968

• molecules
Aggregates of two or more atoms of a substance that exists as a unit. Used for macromolecules. SP-7 1968

MS DOS (operating system)
Use disk operating system (DOS)

• MTFF (space station)
Use man tended free flyers

• multilayer structures
Use laminates

• multiple access
The allocation of communication system resources (output) among multiple users by means of power, bandwidth, and power assignment singly or in combination. 1979

N

• nappes
Use folds (geology)

• navigation
The practice or art of directing the movement of a craft from one point to another. Navigation usually implies the presence of a human, a navigator, aboard the craft. SP-7 1968

NASA THESAURUS SUPPLEMENT (PART 3)

O

• optical depth
Use optical thickness

• optical thickness
Specifically, in calculations of the transfer of radiant energy, the mass of a given absorbing or emitting material lying in a vertical column of unit cross sectional area and extending between two specific levels. Used for optical depth. SP-7 1968

optimization
The procedure used in the design of a system to maximize or minimize some performance index. May entail the selection of a component, a principle of operation, or a technique. IEEE 1968

optoelectronic devices
Electronic devices combining optic and electric ports. IEEE 1968

• ores
Use minerals

• outliers (landforms)
Areas or groups of rocks surrounded by rocks of older age. Used for klippen. AGI 1977

P

parametric amplifiers
Inverting parametric devices used to amplify a signal without frequency translation from input to output. Used for parametric oscillators and reactance amplifiers. IEEE 1968

parametric oscillations
Use parametric amplifiers

• passes
Use gaps (geology)

pattern recognition
The identification of shapes, forms and configurations by automatic means. IEEE 1968

payload stations
The locations in the Space Shuttles' flight decks and cargo bay at which payloads are mounted. 1977

• payloads
Originally, the revenue producing portions of an aircraft's load, e.g., passengers, cargo, and mail. By extension, that which an aircraft, rocket, or spacecraft carries over and above which is necessary for the operation of the vehicle for its flight. SP-7 1968

• peninsulas
Elongated bodies or stretches of land nearly surrounded by water and connected with a larger land area, usually by a neck or an isthmus. The term is derived from the Latin 'paeninsula' 'almost island'. AGI 1968

• pervance
The quotient of the space-charge-limited cathode current by the three-halves power of the anode voltage in a diode. Note: Pervance is the constant G appearing in the Child-Langmuir-Schottky equation. IEEE 1968
abstract models of the information flow in systems with discrete sequential or parallel events. The major use has been the modeling of hardware systems and software concepts of computers. 1979

phase modulation
Angle modulation in which the angle of a sine wave carrier is caused to depart from the carrier angle by an amount proportional to the instantaneous value of the modulation wave. Combinations of phase and frequency modulation are commonly referred to as frequency modulation. SP-7 1968

phase shift keying
The form of phase modulation in which the modulating function shifts the instantaneous phase of the modulated wave among predetermined discrete values. IEEE 1968

photocathodes
Electrodes used for obtaining a photoelectric emission when irradiated. Used for photoelectric cathodes. IEEE 1968

photoconductivity
The conductivity increase exhibited by some nonmetallic materials, resulting from the free carriers generated when photon energy is absorbed in electronic transitions. The rate at which free carriers are generated, the mobility of the carriers, and the length of time they persist in conducting states (their lifetime) are some of the factors that determine the amount of conductivity change. Used for photoresistivity IEEE 1968

photocurrents
Use photoelectric emission

photodiodes
Diodes designed to produce photocurrent by absorbing light. Photodiodes are used for the conversion of optical power to electrical power. IEEE 1968

photoelectric cathodes
Use photocathodes

photoelectric emission
The emission of electrons from atoms or molecules. Used for photocurrents, photoemission, and photoemissivity. ASTM (E 673, E-42) 1968

photoemission
Use photoelectric emission

photoemissivity
Use photoelectric emission

photographic emulsions
The light-sensitive coatings on photographic film consisting usually of silver halide. IEEE 1968

photoresistivity
Use photoconductivity

photovoltaic effect
The production of a voltage difference across a pn junction resulting from the absorption of photon energy. The voltage difference is caused by the internal drift of holes and electrons. IEEE 1968

piezoelectric transducers
Transducers that depend for their operation on the interaction between electric charge and the deformation of certain materials having piezoelectric properties. Note: Some crystals and specially processed ceramics have piezoelectric properties. IEEE 1968

piezoelectricity
The property exhibited by some asymmetrical crystalline materials which when subjected to strain in suitable directions develop polarization proportional to the strain. SP-7 1968

plan position indicators
Display devices on which target blips are shown in plan position, thus forming a map-like display, with radial distance from the center representing range and with the angle of the radius vector representing azimuth angle. Used for PPI (position indicators)

plasma sound waves
Use magnetohydrodynamic waves

plastics
Materials that contain as an essential ingredient one or more organic polymeric substances of large molecular weight, are solid in their finished state, and at some stage in their manufacture or processing into finished articles can be shaped by flow. ASTM (F 412, F-17; D 883, D-20) 1968

PPI (position indicators)
Use plan position indicators

processors (computers)
Use central processing units

prospecting
Use exploration

radar targets
Objects which reflect a sufficient amount of a radar signal to produce an echo signal on the radar screen. SP-7 1968

radio frequency radiation
Use radio waves

radio propagation
Use radio transmission

radio sources (astronomy)
Celestial objects that emit radio waves. IEEE 1968

radio transmission
The transmission of signals by means of radiated electromagnetic waves other than light or heat waves. Used for radio propagation and radio signal propagation. IEEE 1968

radio transmitters
Devices for producing radio-frequency power, for purposes of radio transmission. IEEE 1968

radio waves
Waves produced by oscillation of an electric charge at a frequency useful for radio communication. Used for radio frequency radiation. SP-7 1968

reactance amplifiers
Use parametric amplifiers

9
receivers
Initial components or sensing elements of measuring systems. For example, the receiver of a thermoellectic thermometer is the measuring thermocouple. Instruments used to detect the presence and to determine the information carried by electromagnetic radiation. Receivers include circuits designed to detect, amplify, rectify, and shape the incoming radio frequency signals received at the antenna in such a manner that the information containing component of the received energy can be delivered to the desired indicating of recording equipment. Used for receiving systems.
SP-7 1968

receiving systems
Use receivers

reduction (mathematics)
Use optimization

reefs
Chains of rocks, sand ridges, or coral at or near the surface of water. DOE 1973

reflectance
The ratio of the radiant flux reflected by a body to that incident upon it. Used for reflection coefficient and reflectivity. SP-7 1968

reflection
The process whereby a surface of discontinuity turns back a portion of the incident radiation into the medium through which the radiation approached. SP-7 1968

reflection coefficient
Use reflectance

reflectivity
Use reflectance

reinforced plastics
Plastics with some strength properties greatly superior to those of the base resin, resulting from the presence of high-strength fillers imbedded in the composition. Note: The reinforcing fillers are usually fibers, fabrics, or mats made of fibers. The plastic laminates are the most common and strongest. IEEE 1968

reluctance
The ratio of the magnetomotive force to the magnetic flux through any cross section of the magnetic circuit. IEEE 1968

reluctivity
Use reluctance

remote sensing
The collection of information about an object by a recording device that is not in physical contact with it. The term is usually restricted to mean methods that record reflected of radiated electromagnetic energy, rather than methods that involve significant penetration into the Earth. The technique employs such devices as cameras, infrared detectors, microwave frequency receivers, and radar systems. AGI 1980

resistivity
Use electrical resistivity

resonators
In radio and radar applications, circuits which will resonate at a given frequency, or over a range of frequencies, when properly excited. SP-7 1968

responders
Use transponders

riblets
Longitudinal striations forming V-shaped grooves on aerodynamic and hydrodynamic surfaces. The riblet devices act to reduce large-scale disturbances near the boundary layer. These grooves are dimensional on the order of the wall vortices and turbulent dimensions. 1988

rocks
Naturally formed aggregates of mineral matter occurring in large masses or fragments. Used for stones (rocks). ASTM (D 653, D-18) 1968

rotational flow
Use vortices

sail flats
Use flats (landforms)

scars (geology)
Use erosion

sea walls
Use breakwaters

secondary radar
A radar technique or mode of operation in which the return signals are obtained from beacons, transponders, or repeaters carried by the targets, contrasted with primary radar in which the return signals are obtained by reflection from the targets. IEEE 1968

sediments
Solid fragmental materials that originate from weathering of rocks and are transported or deposited by air, water, or ice, or that accumulate by other natural agents, such as chemical precipitation from solution or secretion by organisms, and that form in layers on the Earth's surface at ordinary temperatures in a loose, unconsolidated form; e.g. sand, gravel, silt, mud, till, loess, and alluvium. AGI 1988

seismology
The study of earthquakes, by extension, the structure of the interior of the Earth via both natural and artificially generated seismic signals. DOE 1968

shunts
Use circuits

silts
Use sediments

SOHO Mission
One of the joint NASA/ESA missions comprising the International Solar Terrestrial Program. The SOHO Mission will investigate the physical processes in the solar corona and solar wind and the structure and dynamics of the solar interior. 1989

Solar and Heliospheric Observatory
Use SOHO Mission
• solar azimuth
Use azimuth

• solar plasma (radiation)
Use solar wind

• solar wind
Streams of plasma flowing approximately radially outward from the sun. Used for solar plasma (radiation).

• stellal Doppler shift
Use Doppler effect

• stones (rocks)
Use rocks

stratospheric warming
A temperature rise in the global stratosphere.

• streams
Bodies of flowing water, great or small, contained within channels as well as uncontained fluids such as air.

• subcircuits
Use circuits

T

• tensile stress
Normal stress tending to lengthen the body in the direction in which it acts.

• terrestrial magnetism
Use geomagnetism

• thermocouples
Devices which convert thermal energy directly into electrical energy. In its basic form it consists of two dissimilar metallic electrical conductors connected in a closed loop. Each junction forms a thermocouple.

• tombolos
Use bars (landforms)

• torque
About an axis, the product of a force and the distance of its line of action from the axis. Used for hinge moments.

transconductance
The real part of the transadmittance. Note: Transconductance is, as most commonly used, the interelectrode transconductance between the control grid and the plate. At low frequencies, transconductance is the slope of the control-grid-to-plate transfer characteristic.

• transducers
Devices capable of being actuated by energy from one or more other transmission systems or media and of supplying related energy to one or more other transmission systems or media as microphones or thermocouples.

• transmittance
The ratio of the radiant flux transmitted by a medium or a body to the incident flux.

V

• transpiration
The passage of gas or liquid through a porous solid (usually under conditions of molecular flow). Used for fluid transpiration.

• transponders
Combined receiver and transmitter whose function is to transmit signals automatically when triggered by a interrogator. Used for responders.

• trapped vortices
Air flow in rotary motion but trapped relative to leading edge vortex separation, which increases not only lift but also drag. The trapped vortices result in thrust and reduced drag. Used for vortex traps.

• trend analysis
A management tool for evaluating variation in data with the ultimate objective of forecasting future events based upon an examination of past results.

• trigger circuits
Circuits that have two conditions of stability, with means for passing from one to the other when certain conditions are satisfied, either spontaneously or through application of an external stimulus.

• Turing machines
Mathematical models of devices that change their internal states and read from, write on, and move potentially infinite tapes, all in accordance with their present states, thereby constituting models for computerlike behavior. Invented in the 1930's, they are named after their inventor, A.M. Turing. Used for finite-state machines.

• vacuum
A given space filled with gas at pressures below atmospheric pressure. Used for aspiration.

• vortex columns
Use vortices

• vortex disturbances
Use vortices

• vortex flow
Use vortices

• vortex traps
Use trapped vortices

• vortex tubes
Use vortices

• vortices
In fluids, circulations drawing their energy from flows of much larger scale and brought about by pressure irregularities. Used for eddies, rotational flow, vortex columns, vortex disturbances, vortex flow, and vortex tubes.
W

• water
Dihydrogen oxide (molecular formula H20). The word is used ambiguously to refer to the chemical compound in general and to its liquid phase; when the former is meant, the term water substance is often used.  

SP-7 1968

• wattmeters
Instruments for measuring the magnitude of the active power in an electric circuit. They are provided with a scale usually graduated in either watts, kilowatts, or megawatts. If the scale is graduated in kilowatts or megawatts, the instruments are usually designated as kilowattmeters or megawattmeters.  

IEEE 1968

• wave radiation
Use electromagnetic radiation

• weather fronts
Use fronts (meteorology)

• weathering
The process of disintegration and decomposition as a consequence of exposure to the atmosphere, to chemical action, and to the action of frost water and heat.  

ASTM (D 653, D-18) 1968

whip antennas
Thin flexible monopole antennas.  

IEEE 1968

whispering gallery modes
Electromagnetic (or elastic) waves that differ in frequency by more than an order of magnitude.  

1988
ACCESS CONTROL
Definition replaced by IEEE definition

CHAOS
Scope note deleted

COMMUTER AIRCRAFT
USE GENERAL AVIATION AIRCRAFT
Deleted, term made postable

COMMUTER AIRCRAFT
USE PASSENGER AIRCRAFT
Deleted, term made postable

DOPPLER RADAR
Definition replaced by IEEE definition

LEARNING MACHINES
Transferred to MACHINE LEARNING

MAGNETOHYDRODYNAMIC WAVES
Definition replaced by IEEE definition

MASS DRIVERS (PAYLOAD DELIVERY)
Transferred to MASS DRIVERS

SATELLITE POWER TRANSMISSION (TO EARTH)
Transferred to SATELLITE POWER TRANSMISSION

TOLMEIN-SCHLICHTING WAVES
Transferred to TOLLMIEN-SCHLICHTING WAVES

TRAPPED VORTEXES
Transferred to TRAPPED VORTICES