A four part cumulative supplement to the 1988 edition of the NASA Thesaurus.
A four part cumulative supplement to the 1988 edition of the NASA Thesaurus.
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.
TABLE OF CONTENTS

PART 1
HIERARCHICAL LISTING
A listing of new NASA Thesaurus terms and their hierarchies supplementing the NASA Thesaurus Hierarchical Listing.

PART 2
ACCESS VOCABULARY
A permuted list of new NASA Thesaurus terms supplementing the NASA Thesaurus Access Vocabulary. Includes uppercase-lowercase information.

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.
NASA THESAURUS SUPPLEMENT

PART 1

HIERARCHICAL LISTING

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 SYSTEM
RT ADVANCED LAUNCH SYSTEM (STS)
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 ASRM (STS)
GS ENGINES
. . . ROCKET ENGINES
. . . BOOSTER ROCKET ENGINES
. . . SPACE SHUTTLE BOOSTERS
. . . ADVANCED SOLID ROCKET MOTOR (STS)
. . . SOLID PROPellant ROCKET ENGINES
. . . 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
NOAA 6 SATELLITE
NOAA 7 SATELLITE
NOAA 8 SATELLITE
REMOTE SENSORS
TIROS N SATELLITES

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

ANTIGUA AND BARBUDA
GS LANDFORMS
. . . WEST INDIES
ANTIGUA AND BARBUDA
NATIONS
. . . ANTIGUA AND BARBUDA
RT CARIBBEAN REGION

APPLICATION SPECIFIC INTEGRATED CIRCUITS
UF ASIC
GS 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
UF GENERAL CIRCULATION MODELS
GS MODELS
. . . ATMOSPHERIC MODELS
. . . ATMOSPHERIC 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

BEAMED POWER
USE POWER BEAMING

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

BLAZARS
GS CELESTIAL BODIES
BLAZARS

BLAZARS -(CONT.)
RT BL Lacertae OBJECTS
. . . ACCRETION DISKS
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
. . . ACousto-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
. . . BROWN DWARF STARS
. . . COOL STARS
. . . DWARF STARS
. . . PHOTO STARS
. . . STELLAR EVOLUTION

BURAN SPACE SHUTTLE
GS MANNED SPACECRAFT
. . . BURAN SPACE SHUTTLE
. . . REENTRY VEHICLES
. . . RECOVERABLE SPACECRAFT
. . . REUSABLE SPACECRAFT
. . . SPACE SHUTTLES
. . . BURAN SPACE SHUTTLE
SOVIET SPACECRAFT
BURAN SPACE SHUTTLE
RT 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
CAMBRIAN PERIOD

GS
PALEOZOIC ERA
CAMBRIAN PERIOD
RT
GECHRONOLOGY
PALEONTOLOGY
PRECAMBRIAN PERIOD

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
CENOZOIC ERA
TERTIARY PERIOD
RT
CRETACEOUS-TERTIARY BOUNDARY
EXTINCTION
GECHRONOLOGY
PALEONTOLOGY

CENTRAL BULGE (GALAXIES)
USE
GALACTIC BULGE

CHAOS
RT
BRANCHING (MATHEMATICS)
MATHEMATICAL MODELS
NONLINEAR SYSTEMS
PERIOD DOUBLING
STOCHASTIC PROCESSES
STRANGE ATTRACTORS

CLUSTER MISSION
GS
SPACE MISSIONS
CLUSTER MISSION
RT
EARTH MAGNETOSPHERE
EUROPEAN SPACE PROGRAMS
INTERNATIONAL COOPERATION
MISSIONS
NASA SPACE PROGRAMS
SCIENTIFIC SATELLITES
SOHO MISSION
SOLAR TERRESTRIAL INTERACTIONS
SOLAR WIND
SPACE PLASMAS

COD (CRACKS)
USE
CRACK OPENING DISPLACEMENT

COMET RENDEZVOUS ASTEROID FLYBY MISSION
GF
CRAS MISSION
GS
SPACE MISSIONS
FLYBY MISSIONS
ASTEROID MISSIONS
COMET RENDEZVOUS ASTEROID FLYBY MISSION
RT
MARINER MARK 2 SPACECRAFT
MISSIONS
NASA SPACE PROGRAMS

COMETARY MAGNETOSPHERES
RT
COMETARY ATMOSPHERES
COMETS
MAGNETOSPHERES

COMMUTER AIRCRAFT
GS
PASSENGER AIRCRAFT
COMMUTER AIRCRAFT
RT
AIR TRANSPORTATION
AROFTCRAFT
COMMERCIAL AIRCRAFT
GENERAL AVIATION AIRCRAFT

COMPACT GALAXIES
GS
CELESTIAL BODIES
GALAXIES
COMPACT GALAXIES
RT
GALACTIC STRUCTURE

COMPUTATIONAL GEOMETRY
GS
COMPUTATION
COMPUTATIONAL GEOMETRY
GEOMETRY
COMPUTATIONAL GEOMETRY
RT
COMPUTER AIDED DESIGN

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

• CONDUCTING POLYMERS
GS
CONDUCTORS
ELECTRIC CONDUCTORS
CONDUCTING POLYMERS
RT
ORGANIC SEMICONDUCTORS
POLYACETYLENE
POLYMERIC FILMS
POLYMERS
SEMICONDUCTORS (MATERIALS)

CRACK OPENING DISPLACEMENT
UF
COD (CRACKS)
DISPLACEMENT
CRACK OPENING DISPLACEMENT
RT
CRACK PROPAGATION
CRACKING (FRACTURING)
CRACKS
FRACTURE MECHANICS
FRACTURE STRENGTH
FRAC-IPRES (MATERIALS)
FRACTURING
GAPS
NOTCH TESTS
NOTCHES
VCIDS

CRAF MISSION
USE
COMET RENDEZVOUS ASTEROID FLYBY MISSION

CRETACEOUS PERIOD
GS
MESOZOIC ERA
CRETACEOUS PERIOD
RT
CRETACEOUS-TERTIARY BOUNDARY
GECHRONOLOGY
PALEONTOLOGY
TERTIARY PERIOD

CRETACEOUS-TERTIARY BOUNDARY
UF
K-T BOUNDARY
RT
MESOZOIC ERA
CRETACEOUS PERIOD
EXTINCTION
GECHRONOLOGY
PALEOBIOLOGY
PALEONTOLOGY
TERTIARY PERIOD

CUSTOM INTEGRATED CIRCUITS
USE
APPLICATION SPECIFIC INTEGRATED CIRCUITS

CYTOMETRY
UF
CYTOPHOTOMETRY
RT
CELLS (BIOLOGY)
CYTOLOGY
MICROSCOPY

CYTOPHOTOMETRY
USE
CYTOMETRY

CZECHOSLOVAKIAN SPACE PROGRAM
GS
PROGRAMS
SPACE PROGRAMS
EUROPEAN SPACE PROGRAMS
CZECHOSLOVAKIAN SPACE PROGRAM
RT
CZECHOSLOVAKIA

DISK OPERATING SYSTEM (DOS)
GS
COMPUTER PROGRAMS
COMPUTER SYSTEMS PROGRAMS
OPERATING SYSTEMS (COMPUTERS)
DISK OPERATING SYSTEM (DOS)
RT
ASSEMBLER ROUTINES
COMPILERS
COMPUTER INFORMATION SECURITY
COMPUTER SYSTEMS DESIGN
DISKS

D

DISK OPERATING SYSTEM (DOS)-(CONT.)
INPUT/OUTPUT ROUTINES
MAGNETIC DISKS
ROUTINES
SYSTEMS

DJIBOUTI
GS
NATIONS
DJIBOUTI
RT
AFRICA

E

ECHELLE GRATINGS
GS
GRAILS (SPECTRA)
ECHELLE GRATINGS
RT
DIFFRACTION
ECHELLE GRATINGS
REFLECTION

• EDGE DETECTION
UF
BOUNDARY DETECTION (IMAGERY)
GS
DETECTION
EDGE DETECTION
RT
COMPUTER VISION
IMAGE ANALYSIS
IMAGE PROCESSING
PATTERN RECOGNITION
SCENE ANALYSIS

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

ELECTROMAGNETIC COUPLING
GS
COUPLING
ELECTROMAGNETIC COUPLING
MICROWAVE COUPLING
OPTICAL COUPLING
RT
ELECTROMAGNETIC INTERACTIONS
LASER PLASMA INTERACTIONS
MAGNETOSPHERE-IONOSPHERE COUPLING
PLASMA-ELECTROMAGNETIC INTERACTION

ELECTRON-POSITRON PAIRS
GS
PARTICLES
ELECTRON-POSITRON PAIRS
RT
ANNIHILATION REACTIONS
CHARGED PARTICLES
ELECTRON-POSITRON PLASMAS
ELECTRONS
PAIR PRODUCTION
POSITRON ANNIHILATION
POSITRONS

ELECTRON-POSITRON PLASMAS
GS
PARTICLES
ELECTRON-POSITRON PAIRS
RT
ANNIHILATION REACTIONS
ELECTRONS
ELECTRON-POSITRON PLASMAS
ELECTRONS
PAIR PRODUCTION
POSITRONS
RELATIVISTIC PLASMAS

ELLIPSOMETRY
RT
DIMENSIONAL MEASUREMENT
ELLIPSOMETERS
ELLIPTICITY
FILM THICKNESS
MEASUREMENT
OPTICAL MEASUREMENT
POLARIZED LIGHT

ENDEAVOUR (ORBITER)
GS
Manned SPACECRAFT
SPACE SHUTTLE ORBITERS
ENDEAVOUR (ORBITER)
REENTRY VEHICLES
RECOVERABLE SPACECRAFT
LASER RADIATION

LASER POWER BEAMING-(CONT.)

RT ENERGY CONVERSION
LASER PROPULSION
MICROWAVE POWER BEAMING
MICROWAVE TRANSMISSION
SATELLITE POWER TRANSMISSION
SPACECRAFT POWER SUPPLIES

LASER RADIATION

LDR (TELESCOPE)

LEARNING MACHINES

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

MARS SAMPLE RETURN MISSIONS
UF MARS ROVER SAMPLE RETURN MISSION

MASS DRIVERS
RT MASS DRIVERS

MASSIVELY PARALLEL PROCESSORS
UF MPP (COMPUTERS)
GS DATA PROCESSING EQUIPMENT
DIGITAL COMPUTERS
DIGITAL COMPUTERS
PARALLEL COMPUTERS
PARALLEL PROCESSORS
ARCHITECTURE (COMPUTERS)
PARALLEL PROCESSING (COMPUTERS)

MATTER-ANTIMATTER PROPULSION
GS PROPULSION
SPACECRAFT PROPULSION
MATTER-ANTIMATTER PROPULSION
RT ANNIHILATION REACTIONS
ANTI-MATTER
INTERPLANETARY FLIGHT
INTERPLANETARY SPACECRAFT
INTERSTELLAR TRAVEL
NUCLEAR PROPULSION
NUCLEAR PARTICLES
MIXING LENGTH ANNIHILATION ROCKET ENGINES

MARS Sample RETURN MISSIONS
GS SPACE MISSIONS
MARS SAMPLE RETURN MISSIONS
GS SPACE MISSIONS
MARS SAMPLE RETURN MISSIONS
GS SPACE MISSIONS
MARS (PLANT BASED)
MARS SHELVES
MARS SURFACE SAMPLES
NASA SPACE PROGRAMS
ROVING VEHICLES
SAMPLES
SPACE EXPLORATION

MASER MATERIALS
RT LASER MATERIALS
MASERS
RT MATERIALS

MATING PUMPING
RT LASER PUMPING
MASER OUTPUTS
MASERS
OPTICAL PUMPING
OPTICAL PUMPING

MASSIVELY PARALLEL PROCESSORS

RT MASSIVELY PARALLEL PROCESSORS

MASER OUTPUTS

MASSIVELY PARALLEL PROCESSORS

RT MASSIVELY PARALLEL PROCESSORS

MATERIALS

RT OXYGEN-HYDROCARBON ROCKET ENGINES
OXYGEN-HYDROCARBON ROCKET ENGINES

LIGHT HELICOPTERS

RT LIGHT HELICOPTERS

LIGHT HELICOPTERS

RT LIGHT HELICOPTERS

LIGHT HELICOPTERS

RT LIGHT HELICOPTERS

LIGHT HELICOPTERS

RT LIGHT HELICOPTERS

LIGHT HELICOPTERS

RT LIGHT HELICOPTERS

LIGHT HELICOPTERS

RT LIGHT HELICOPTERS

LIGHT HELICOPTERS

RT LIGHT HELICOPTERS

LIGHT HELICOPTERS

RT LIGHT HELICOPTERS

LIGHT HELICOPTERS

RT LIGHT HELICOPTERS

LIGHT HELICOPTERS

RT LIGHT HELICOPTERS

LIGHT HELICOPTERS

RT LIGHT HELICOPTERS

LIGHT HELICOPTERS

RT LIGHT HELICOPTERS

MARS SAMPLE RETURN MISSIONS

MARS SAMPLE RETURN MISSIONS

MARS SAMPLE RETURN MISSIONS

MARS SAMPLE RETURN MISSIONS

MARS SAMPLE RETURN MISSIONS

MARS SAMPLE RETURN MISSIONS

MARS SAMPLE RETURN MISSIONS

MARS SAMPLE RETURN MISSIONS

MARS SAMPLE RETURN MISSIONS

MARS SAMPLE RETURN MISSIONS

MARS SAMPLE RETURN MISSIONS

MARS SAMPLE RETURN MISSIONS

MARS SAMPLE RETURN MISSIONS
NASA THESAURUS SUPPLEMENT (PART 1)

NUCLEAR ASTROPHYSICS-(CONT.)
STELLAR PHYSICS

NUCLEAR BULGE (GALAXIES)
USE GALACTIC BULGE

- OLIGOMERS
RT MONOMERS
POLYMERIZATION
∞ POLYMERS

OPTICAL MATERIALS
RT GLASS
INFRARED WINDOWS
LENSES
∞ MATERIALS
MIRRORS
OPTICAL FIBERS
WINDOWS (APERTURES)

- ORBITAL BREAKUP
USE SPACECRAFT BREAKUP

OXGEN-HYDROCARBON ROCKET ENGINES
UF LIQUID OXYGEN HYDROCARBON ROCKET ENGINES
LOX-HYDROCARBON ROCKET ENGINES
GS ENGINES
. . . LIQUID PROPELLANT ROCKET ENGINES
OXYGEN-HYDROCARBON ROCKET ENGINES
LIQUID OXYGEN
REUSABLE ROCKET ENGINES
SPACECRAFT PROPULSION

P

PALEOZOCIC ERA
GS PALEOZOCIC ERA
RT GEOCHRONOLOGY
MIOCENIC ERA
PALEONTOLOGY
PRECAMBRIAN PERIOD

- PAN (POLYACRYLONITRILE)
USE POLYACRYLONITRILE

PECULIAR GALAXIES
GS CELESTIAL BODIES
. . . GALAXIES
. . . PECULIAR GALAXIES

PHASE SEPARATION (MATERIALS)
RT BINARY SYSTEMS (MATERIALS)
LIQUID PHASES
MISCELLANEOUS GAP
PHASE TRANSFORMATIONS
∞ SEPARATION
SOLID PHASES
SOLUBILITY

- POLYACRYLONITRILE
UF PAN (POLYACRYLONITRILE)
GS NITRILES
. . . ACRYLONITRILES
POLYACRYLONITRILE
RT ACRYLIC RESINS
CARBON FIBERS
∞ POLYMERS
SYNTHETIC FIBERS

- POLYBLENDS
USE POLYMER BLENDS

- POLYMER BLENDS
UF POLYBLENDS
GS MIXTURES
. . . POLYMER BLENDS
RT COPOLYMERS

POLYMER BLENDS-(CONT.)
POLYMER PHYSICS
∞ POLYMERS
THERMOPLASTIC RESINS

- POWER BEAMING
UF BEAMED POWER
GS POWER BEAMING
. . . LASER POWER BEAMING
. . . MICROWAVE POWER BEAMING
. . . SATELLITE POWER TRANSMISSION
RT ENERGY CONVERSION
LASER PROPULSION
MICROWAVE TRANSMISSION
POWER TRANSMISSION
SOLAR POWER SATELLITES
SPACECRAFT POWER SUPPLIES

- POWER TRANSISSION (LASERS)
USE LASER POWER BEAMING

- POWER TRANSMISSION (MICROWAVE)
USE MICROWAVE POWER BEAMING

- PROTEIN CRYSTAL GROWTH
GS GROWTH
. . . PROTEIN CRYSTAL GROWTH
RT PROTEIN SYNTHESIS
PROTEINS
SPACE PROCESSING

PULSAR MAGNETOSPHERES
GS STELLAR MAGNETOSPHERES
PULSAR MAGNETOSPHERES
RT MAGNETIC FIELDS
∞ MAGNETOSPHERES
PULSARS
STELLAR ATMOSPHERES
STELLAR MAGNETIC FIELDS

QUANTUM ELECTRONICS
QUANTUM WELLS
TRANSISTORS
TUNNELING
∞ TUNNELING

R

RECORDS MANAGEMENT
GS MANAGEMENT
. . . INFORMATION MANAGEMENT
. . . RECORDS MANAGEMENT
RT DATA MANAGEMENT
INFORMATION SYSTEMS
MANAGEMENT INFORMATION SYSTEMS
RECORDS

- REENTRY BREAKUP
USE SPACECRAFT BREAKUP

RESONANT TUNNELING-(CONT.)
NEGATIVE RESISTANCE DEVICES
QUANTUM ELECTRONICS
QUANTUM WELLS
TRANSISTORS
TUNNEL DIODES
∞ TUNNELING

RING GALAXIES
GS CELESTIAL BODIES
. . . GALAXIES
. . . RING GALAXIES
RT GALACTIC STRUCTURE

- ROBOT ARMS
USE ROBOT DYNAMICS

- ROBOT DYNAMICS
UF ROBOTS (ROBOTICS)
RT END EFFECTORS
MANIPULATORS
ROBOT DYNAMICS
ROBOTS
∞ SENSORS

- ROBOT MOTION
USE ROBOT DYNAMICS

- ROBOT SENSORS
RT COMPUTER VISION
ROBOTICS
ROBOTS
∞ SENSORS

RIBLETS
GS GROOVES
. . . GROOVES
RT RIBLETS
. . . BOUNDARY LAYER CONTROL
DRAG REDUCTION
FRICTION DRAG
SHEAR LAYERS
SKIN FRICTION
STRATIFICATION
TURBULENT BOUNDARY LAYER
VORTEX ALLEVIATION

RING GALAXIES
GS CELESTIAL BODIES
. . . GALAXIES
. . . RING GALAXIES
RT GALACTIC STRUCTURE

- ROTARY MACHINES
USE ROBOT DYNAMICS

- ROTATIONAL SPECTRA
GS SPECTRA
. . . MOLECULAR SPECTRA
. . . ROTATIONAL SPECTRA
RT ABSORPTION SPECTRA
LINE SPECTRA
MOLECULAR EXCITATION
MOLECULAR ROTATION
MOLECULAR SPECTROSCOPY
VIBRATIONAL SPECTRA

- ROTORDYNAMICS
UF ROTORDYNAMICS
RT DYNAMIC CHARACTERISTICS
DYNAMIC RESPONSE
DYNAMIC STABILITY
∞ DYNAMICS
ROTARY STABILITY
ROTARY WINGS
ROTOR AERODYNAMICS
ROUTERS
STRUCTURAL VIBRATION
TURBOMACHINERY

- ROTORDYNAMICS
USE ROTOR DYNAMICS

∞ SENSORS

∞ SENSORS

∞ SENSORS

∞ SENSORS

∞ SENSORS
SATELLITE BREAKUP

- SATELLITE BREAKUP
  USE SPACECRAFT BREAKUP

- SATELLITE FRAGMENTATION
  USE SPACECRAFT BREAKUP

- SATELLITE POWER TRANSMISSION
  GS POWER BEAMING
  RT LASER POWER BEAMING
  MICROPOWER BEAMING
  RECTENNAS
  SOLAR ARRAYS
  SOLAR CELLS
  SOLAR POWER SATELLITES

SCANNING TUNNELING MICROSCOPY
GS MICROSCOPY
RT ELECTRON MICROSCOPES

SEEING (ASTRONOMY)
GS ATMOSPHERIC SEEING
RT ASTRONOMICAL OBSERVATORIES
ASTRONOMY
ATMOSPHERIC EFFECTS
ATMOSPHERIC OPTICS
ATMOSPHERIC TURBULENCE
OPTICAL CORRECTION PROCEDURE
SCLINOMETRICAL
SPACE OBSERVATIONS (FROM EARTH)
TELESCOPES
TURBULENCE EFFECTS
VISUAL OBSERVATION

SEYCHELLES
GS LANDFORMS
ISLANDS
SEYCHELLES
NATIONS
SEYCHELLES
RT AFRICA
INDIAN OCEAN

SH WAVES
GS ELASTIC WAVES
RT SH WAVES

SHELL STARS
GS CELESTIAL BODIES
STARS
PECULAR STARS
SHELL STARS
RT SHELL STARS

SINGLE INPUT SINGLE OUTPUT SYSTEMS
USE SISO (CONTROL SYSTEMS)

SIS (SUPERCONDUCTORS)
GS SUPERCONDUCTOR INSULATOR
RT SUPERCONDUCTORS

SIGO (CONTROL SYSTEMS)
GS SINGLE INPUT SINGLE OUTPUT SYSTEMS
RT SIGO (CONTROL SYSTEMS)

SOHO MISSION
GS SPACE MISSIONS
RT SOHO MISSION

SOLAR AND HELIOSPHERIC OBSERVATORY
USE SOHO MISSION

SPACECRAFT BREAKUP
GS SPACECRAFT BREAKUP
RT SPACECRAFT BREAKUP

SPACECRAFT ENVIRONMENTS
GS SPACECRAFT ENVIRONMENTS
RT SPACECRAFT ENVIRONMENTS

SPACECRAFT FRAGMENTATION
USE SOHO MISSION

STELLAR ENVELOPES
GS STELLAR ENVELOPES

STONY-IRON METEORITES
GS STELLAR PHYSICS

SUPERCONDUCTING FILMS
GS SUPERCONDUCTING FILMS

TOTAL OZONE MAPPING SPECTROMETER
USE TOTAL OZONE MAPPING SPECTROMETER

TOTAL OZONE MAPPING SPECTROMETER
GS MEASURING INSTRUMENTS

TOMS
USE TOTAL OZONE MAPPING SPECTROMETER

TOMS
GS MEASURING INSTRUMENTS

TOMS
GS MEASURING INSTRUMENTS
TWO DIMENSIONAL MODELS (CONT.)

UARS (SATELLITE)

USE UPPER ATMOSPHERE RESEARCH SATELLITE (UARS)

UNIX (OPERATING SYSTEM)

GS COMPUTER SYSTEMS PROGRAMS

OPERATING SYSTEMS (COMPUTERS)

UNIX (OPERATING SYSTEM)

UPPER ATMOSPHERE RESEARCH SATELLITE (UARS)

GS ARTIFICIAL SATELLITES

SCIENTIFIC SATELLITES

UPPER ATMOSPHERE RESEARCH SATELLITE (UARS)

UREILITES

GS CELESTIAL BODIES

METEORITES

STONY METEORITES

ACHONDRITES

UREILITES

CARBONACEOUS METEORITES

UREILITES

METEORIC DIAMONDS

VECTOR PROCESSING (COMPUTERS)

GS DATA PROCESSING

MULTIPROCESSING (COMPUTERS)

PARALLEL PROCESSING (COMPUTERS)

VECTOR QUANTIZATION

RT CODING

DATA COMPRESSION

DIGITAL TECHNIQUES

IMAGE PROCESSING

V VECTORS (MATHEMATICS)

VOICE DATA PROCESSING

VIDEO TAPE RECORDERS

GS RECORDING INSTRUMENTS

VIDEO TAPE RECORDERS

TAPE RECORDERS

VIDEO TAPE RECORDERS

VIDEO TAPE RECORDERS

RT VIDEO TAPES

VIDEO TAPES

RT CINEMATOGRAPHY

INF R INFORMATION

MAGNETIC TAPES

MOTION PICTURES

PHOTOGRAPHY

PHOTOGRAPHY

TAPES

VIDEO TAPE RECORDERS

VISUAL AIDS

VORTEX TRAPS

USE TRAPPED VORTICES

Wales

GS NATIONS

UNITED KINGDOM
NASA THESAURUS SUPPLEMENT

PART 2

ACCESS VOCABULARY

A

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)
analyses, 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
artificial 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)
astrophysics, nuclear
USE nuclear astrophysics
Atmosphere Research Satellite (UARS), Upper
USE Upper Atmosphere Research Satellite (UARS)
atmospheric
USE atmospheric
(atmospheric), general circulation models
USE atmospheric
atmospheric seeing
USE seeing (astronomy)
Australian space program
AVHRR
USE Advanced Very High Resolution Radiometer
B

Barbuda, Antigua and
USE Antigua and Barbuda
baselines (artificial intelligence), knowledge bases
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
buoy, galactic
USE galactic buoy
buoy (galaxies), central
USE galactic buoy
buoy (galaxies), nuclear
USE galactic buoy
Buran space shuttle

C

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
USE application specific integrated circuits
circuits, custom integrated
USE application specific integrated circuits
circulation models (atmospheric), general
USE atmospheric
cirrus (astronomy), infrared
USE infrared cirrus (astronomy)
clouds, ice
USE ice clouds
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**
- Comet rendezvous asteroid flyby mission

### Cretaceous Period

**Cretaceous-Tertiary boundary**

- Crystal growth, protein
  - Protein crystal growth

- Currents, Birkeland
  - Birkeland currents

- Currents, field aligned
  - Field aligned currents

- Custom integrated circuits
  - Application specific integrated circuits

- Cytophotometry
  - Cytometry

- Czechoslovakian space program

### D

**Deployable reflector, large**
- Large deployable reflector

- Detection, edge
  - Edge detection

- Dimensional models, three
  - Three dimensional models

- Dimensional models, two
  - Two dimensional models

- Diminishing schemes, total variation
  - Total variation schemes

- Disk operating system (DOS)

- Displacement, crack opening
  - Crack opening displacement

- Djibouti
  - (DOS), disk operating system
  - Disk operating system (DOS)

- DOS (operating system), MS
  - Disk operating system (DOS)

- Drivers, mass
  - Mass drivers

- Dwarf stars, brown
  - Brown dwarf stars

- Dynamics, robot
  - Robot dynamics

- Dynamics, rotor
  - Rotor dynamics

### E

**Echelle gratings**

- Edge detection

- Effectors

- Electromagnetic coupling

- Electron-positron pairs

- Electron-positron plasmas

### F

**Field aligned currents**

- Films, superconducting
  - Superconducting films

- Flight, transition
  - Transition flight

- Flow transfer events
  - Flow transfer events

- Flyby mission, Comet rendezvous asteroid
  - Comet rendezvous asteroid flyby mission

- Flyers, man tended
  - Man tended free flyers

- Fragmentation, satellite
  - Spacecraft breakup

- Free flyers, man tended
  - Man tended free flyers

### G

**Galactic bulge**

- Galaxies, central bulge
  - Galactic bulge

- Galaxies, compact
  - Compact galaxies

- Galaxies, interacting
  - Interacting galaxies

- Galaxies, nuclear bulge
  - Galactic bulge

- Galaxies, peculiar
  - Peculiar galaxies

- Galaxies, ring
  - Ring galaxies

### H

**Hairpin vortices**

- Helicopters, light
  - Light helicopters

- Heliospheric observatory, solar and
  - Solar and heliospheric observatory

- Heliotrons

- High resolution radiometer, advanced very
  - Advanced very high resolution radiometer

- Holes (mechanics)

- Horizontally polarized shear waves
  - SHE waves

- Horsehoe vortices

- Hungarian space program

- Hydrocarbon rocket engines, liquid oxygen
  - Oxygen-hydrocarbon rocket engines

- Hydrocarbon rocket engines, LOX
  - Oxygen-hydrocarbon rocket engines

- Hydrocarbon rocket engines, oxygen
  - Oxygen-hydrocarbon rocket engines

### I

**Ice clouds**

- Infrared cirrus (astronomy)

- Input single output systems, single
  - SISO (control systems)

- Insulator superconductors, superconductor
  - 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
USE interacting galaxies

interaction, galaxy
USE interacting galaxies

Ireland, Northern
USE Northern Ireland

Iron meteorites, stony
USE stony-iron meteorites

Israeli space program

K

k-epsilon turbulence model
USE k-epsilon turbulence model

K-T boundary
USE Cretaceous-Tertiary boundary

kappa-epsilon turbulence model
USE k-epsilon turbulence model

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

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

Large Deployable Reflector
USE Large Deployable Reflector

laser beams
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)

tilayers (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

M

machine learning
USE machine learning

magnetospheres, 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
USE 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

(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, CRAF
USE Comet Rendezvous Asteroid Flyby Mission

Mission, Mars Rover Sample Return
USE Mars sample return missions

(operating system), MS DOS

Mission, SOHO
USE SOHO Mission

missions, Mars sample return
USE Mars sample return missions

mixing layers (fluids)

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

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

models (atmospheric), general circulation
USE atmospheric models

models, three dimensional
USE three dimensional models

models, turbulence
USE turbulence models

models, two dimensional
USE two dimensional models

modes, whispering gallery
USE whispering gallery modes

moonlets

motion, robot
USE robot dynamics

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

Observatory, Solar and Heliospheric Observatory
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
USE single input single output systems

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

oxygen-hydrocarbon rocket engines

Ozone Mapping Spectrometer, Total
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 horizontally polarized shear waves

polyacrylonitrile

(polyacrylonitrile), PAN
USE polyacrylonitrile

polyblends
USE polymer blends

polymer blends

polymers, conducting
USE conducting polymers

positron pairs, electron-positron pairs
USE electron-positron pairs

positron plasmas, electron-positron plasmas
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 beam

power transmission (microwave)
USE microwave power beam

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

propulsion, matter-antimatter
USE matter-antimatter propulsion

protein crystal growth

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

Reflector, Large Deployable
USE Large Deployable Reflector

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

(robotics), 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 Rover
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)

(semiconductors), 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), MTF
USE man tended free flyers

(spacecraft), breakout
USE spacecraft breakout

spacecraft breakout

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

starquakes

stars, brown dwarf
USE brown dwarf stars

stars, shell
USE shell stars

stars, triple
USE triple stars

station), MTF
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)

T

T boundary, K-
USE Cretaceous-Tertiary boundary

tape recorders, video
USE video tape recorders

tapes, video
USE video tapes

(teleoscope), 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)

USE

V

variation diminishing schemes, total
USE TVD schemes

vector processing (computers)

USE

vector quantization

USE

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

video tape recorders

USE

video tapes

USE

viroles, computer
USE computer viruses

vortex traps
USE trapped vortices

vortices, hairpin
USE horseshoe vortices

vortices, horseshoe
USE horseshoe vortices

vortices, trapped
USE trapped vortices

W

Wales

USE

warming, global
USE global warming

warming, stratospheric
USE stratospheric warming

water splitting

USE

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

USE

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.  
  
  AGI 1968

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

IEEE 1968

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

IEEE 1980

- **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.  

IEEE 1975

- **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.  
  
  AGI 1968

- **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.  
  
  ASTM (D 1356, D-22) 1968

Alfven waves
Use magneto-hydrodynamic waves

- **algal bloom**
  Use algae

- **algal blooms**
  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.  
  
  SP-7 1968

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

IEEE 1968

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.  

IEEE 1968

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

IEEE 1968

- **anodes**
  The positive poles or electrodes of electron emitters, such as electron tubes or electric cells.  
  
  SP-7 1968

- **Antarctic regions**
  The areas surrounding and including the continent of Antarctica. Used for Antarctica.  
  
  1968

- **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 semifusorial fracture. Anthracite ignites with difficulty and burns with a short blue flame, without smoke. Used for hard coal.  
  
  AGI 1973

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.  

IEEE 1973

- **apatites**
  Use minerals
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 Maldive 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

B

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 interfluves. 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 'boyau', '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
• 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 arcing of static electricity. Glueing or cementing together for structural strength.

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

• 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.

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

• discontinuity
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 scarps. 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. **SP-7 1968**

- **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. **AGI 1973**

- **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) **AGI 1968**

- **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. **1983**

- **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, photo-geology, geophysical and geochemical methods, and both surface and underground investigations. Used for discovering and prospecting. **AGI 1968**

- **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. **AGI 1975**

  **FDMA**
  Use frequency division multiple access

- **feature extraction**
  Use pattern recognition

- **field aligned currents**
  Electric currents aligned along magnetic fields. **1988**

- **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. **AGI 1974**

- **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. **AGI 1976**

- **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 overflow. **AGI 1973**

- **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. **AGI 1968**

- **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. **AGI 1973**

- **fossil fuels**
  A general term for any hydrocarbons that may be used for fuel; chiefly petroleum, natural gas, and coal. **AGI 1974**

- **free electrons**
  Electrons which are not bound to an atom. **SP-7 1968**

- **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 retransposed 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. **IEEE 1979**

- **frequency ranges**
  Specifically designated parts of the frequency spectrum. **IEEE 1968**

- **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. **AGI 1968**

- **gaps (geology)**
  Ravines or gorges cut deeply through a mountain ridge, or between hills or mountains. Used for cols and passes. **AGI 1975**

- **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. **IEEE 1968**

- 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. **AGI 1968**

- 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. **AGI 1968**

- 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. **SP-7 1968**

- 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 deictic DI stance METER. **AGI 1968**

- geoelectricity
  The Earth's natural electric fields and phenomena. It is closely related to geomagnetism. **AGI 1968**

- 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. **SP-7 1968**

- 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. **SP-7 1968**
**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-locked 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**

**M**

**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 isolete 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 Alfvén 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 multicompont 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

• permeance
The quotient of the space-charge-limited cathode current by the three-halves power of the anode voltage in a diode. Note: Permeance is the constant G appearing in the Child-Langmuir-Schottky equation. IEEE 1968
Petri nets
Abstract, formal 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

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

photosynthesis
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 magneto-hydrodynamic 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
receivers

Initial components or sensing elements of measuring systems. For example, the receiver of a thermoelectric 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

salt flats

Use flats (landforms)

scarps

Use escarpments

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

S
NASA THESAURUS SUPPLEMENT (PART 3)

VORTICES

- 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).

- stellar 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.

- 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 H2O). 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

IEEE 1968

• weather fronts
Use fronts (meteorology)

ASTM (D 653, D-18) 1968

• 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.
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 TOLLMEN-SCHLICHTING WAVES

TRAPPED VORTEXES
Transferred to TRAPPED VORTICES