Space Radiation Program Element

Requirements

- **Develop and Validate Standards**
  - By performing research to inform the development and validation of Space Radiation Permissible Exposure Limits for:
    - Radiation Carcinogenesis
    - Acute Radiation Syndromes
    - Acute or Late Central Nervous System Affects
    - Degenerative Tissue Affects

- **Quantify Space Radiation Human Health Risks**
  - By developing validated mechanisms, models and methods to quantify the risk of Radiation Carcinogenesis and Acute Radiation Syndromes for Exploration Missions
  - By performing the research necessary to develop an evidence base for radiation induced Acute or Late Central Nervous System Affects and Degenerative Tissue Affects
  - By identifying whether synergistic effects from other spaceflight factors modify radiation health risks

- **Mitigate Risks thru Countermeasures & Technologies**
  - By developing tools and methodologies to evaluate shielding approaches and vehicle requirements for mission planning and design
  - By performing the research necessary to develop and validate biomedical or dietary countermeasures for radiation carcinogenesis and other risks quantified as significantly high

- **Treat and Monitor Unmitigated Risks**
  - By developing tools to assess and monitor compliance with the Space Radiation Permissible Exposure Limits
  - By developing biodosimeter and biomarker technologies for radiation carcinogenesis and other risks quantified as significantly high
  - By developing in-flight physical detector technologies through TRL 4 to monitor compliance with the Space Radiation Permissible Exposure Limits
  - By supporting the transition of research deliverables to technology maturation and operational programs

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Cancer Gaps

- DEGENERATIVE Gaps

ACUTE Gaps

Schedule Overview