Design and Development of an Advanced Thermonuclear Fusion Propulsion R&D Facility at UAHuntsville

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Overview
- Develop the propulsion technologies for reliable fusion propulsion for manned spaceflight within the next half century.
- Develop educational and professional resources to enable perpetuation of our advanced capabilities in spaceflight and exploration.

Key Developments
- Increasing the repetition rate of large pulse power machines to 100 pulses/minute
- Developing materials and propulsion systems designs that tolerate temperatures in excess of 10 keV (>120,000,000 K)
- Developing and designing dynamic plasmas that act as both a fuel source and a radiation shield
- Developing explosive containment structures that withstand the terajoule outputs characteristic of the thrust levels from such a fusion system
- Developing electrical power generated by the fusion systems

Impact
- State-of-the-art facility:
  - Versatile lab for full- and sub-scale tests
  - New capabilities in radiation effects testing & evaluation
  - Theoretical modeling & support
- Provide enriching environment for students, faculty, and technical community

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