1. **Research Title:**
   Novel Power Generation and Thermal Management Concepts for High-Speed Vehicles
2. **Individual Sponsor:**

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3. **Academic Area/Field and Education Level**
   Aerospace Engineering, Electrical Engineering, or Mechanical Engineering (MS or PhD)
4. **Objectives:** Design/model/develop/test integrated power generation and/or thermal management subsystem technologies applicable to high-speed aircraft.
5. **Description:** *The Air Force Research Laboratory is seeking innovative technical and integrated system approaches to power generation and/or subsystem thermal management for high-speed vehicles, which may use novel propulsion systems that present unique opportunities to reduce subsystem size/weight. Technologies that convert/harvest energy and can operate in a challenging thermal/mechanical environment are of interest, and the AF seeks to evaluate their performance, reusability, scalability, and integration impacts. Technology areas include, but are not limited to:*
   - *Integrated power and thermal cycles using novel working fluids (e.g., transcritical/supercricital Rankine/Brayton cycles)*
   - *High temperature energy harvesting (e.g., thermionic, thermophotovoltaic, thermoelectric generators and associated integration technologies)*
   - *Dynamic modeling and MBSE approaches (e.g. MATLAB Simulink-based modeling and simulation, including custom component model development, subsystem design, and performance analysis)*
6. **Research Classification/Restrictions:** Unclassified/U.S. Citizens only
7. **Eligible Research Institutions:** All DAGSI

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