

Opportunity Title: Collaborative Hypersonic And Missile Defense Faculty Research at AFIT
Opportunity Reference Code: AFIT-2025-0019-F

Organization U.S. Department of Defense (DOD)

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How to Apply Click on *Apply* at the bottom of the opportunity to start your application.

Description The Air Force Institute of Technology is offering a faculty research fellowship in **Collaborative Hypersonic and Missile Defense** at Wright Patterson Air Force Base.

What will I be doing?

As an ORISE participant, you will engage with AFIT Graduate School of Engineering and Management Faculty in Hypersonic Vehicle development to participate in configuring new geometries, modeling and simulating the vehicle response to aerodynamic, structural, and thermal loading conditions and conducting physical experiments for validation. Computer packages such as ABAQUS, NASTRAN, CAPS, MatLab, DAKOTA, Kestrel, FUN3D, etc. are utilized for data generation, post-processing and response interpretation. Opportunities exist to develop skills and experience in new and efficient methods of predicting the vehicle response under multiple flight paths, maneuvers, high-speed impacts, and multiple load conditions, and determine the vehicle's sustainability and resilience through the computation of stresses, deflections, and buckling resistance. Computational tools are utilized for predicting aerodynamic pressures using computational fluid dynamics (CFD) and analyze for vehicle stability, survivability, fatigue life and resilience under extreme operating conditions (e.g., high temperature operating conditions, vehicle response to various heat transfer modes).

Why should I apply?

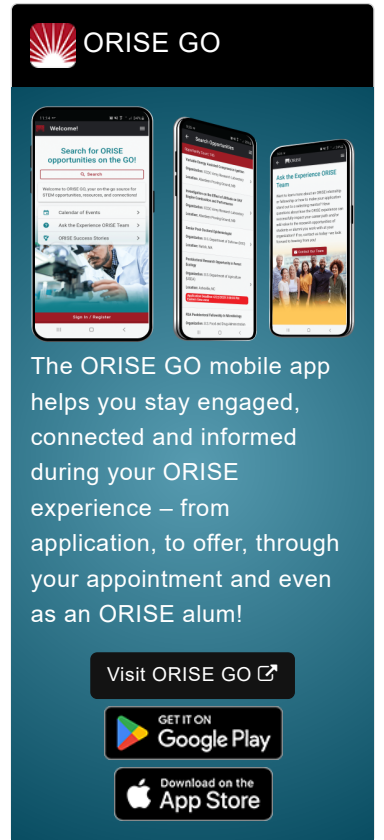
Under the guidance of a mentor, you will engage in a variety of research activities, including:

- Expand skills and experience in defining the associated uncertainties in mission, vehicle geometry, and material variabilities for computing the safety bands that are available for various vehicle geometries using probabilistic analysis methods
- Consider efficient approaches to creating optimized vehicle configurations for shape, size, and topology aspects of hypersonic mission; integrating aerodynamic, thermal, and structural performance requirements in a multidisciplinary optimization environment
- Participate in demonstrating newly developed configurations and assessing manufacturability issues for high temperature materials that are being considered with their advanced properties
- Expand skills in configuring new geometries in CAD
- Participate in modeling and simulating vehicle response to aerodynamic, structural, and thermal loading conditions
- Participate in conducting physical experiments for validation
- Share state-of-the-art methods and expertise through short courses, lectures, and discussions with DoD scientists and engineers

Where will I be located? Dayton, Ohio

What is the anticipated start date?

Exact start dates will be determined at the time of selection and in coordination with the selected candidate. Applications are reviewed on an ongoing basis and fellowships will be filled as qualified candidates are identified.



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What is the appointment length?

Faculty appointments are generally for 10-12 weeks during the summer, but appointments during the academic year are also available. Appointments may be extended depending on funding availability, project assignment, program rules, and availability of the participant.

What are the provisions?

Participants will receive a stipend to be determined by **AFIT**. Stipends are typically based on the participant's academic standing, discipline, experience, and research facility location. Other benefits may include the following:

- Health Insurance Supplement. *Participants are eligible to purchase health insurance through ORISE.*
- Relocation Allowance
- Training and Travel Allowance

About AFIT

The mission of the Air Force Institute of Technology (AFIT) is to help build America's airpower, by educating military and civilian Airmen to innovatively accomplish the Air Force's core missions, in support of joint operations, more effectively, efficiently, sustainably and affordably. We provide unique defense-focused, research-enabled, multi-disciplinary advanced academic education, as well as globally delivering career-long, action-based, functional professional continuing education, over a continuum of learning, on-command and on-demand. To learn more about the research performed at AFIT, please visit www.afit.edu.

About ORISE

This program, administered by Oak Ridge Associated Universities (ORAU) through its contract with the U.S. Department of Energy (DOE) to manage the Oak Ridge Institute for Science and Education (ORISE), was established through an interagency agreement between DOE and DoD. Participants do not enter into an employee/employer relationship with ORISE, ORAU, DoD or any other office or agency. Instead, you will be affiliated with ORISE for the administration of the appointment through the ORISE appointment letter and Terms of Appointment. Proof of health insurance is required for participation in this program. Health insurance can be obtained through ORISE. For more information, visit the [ORISE Research Participation Program at the U.S. Department of Defense](#).

Qualifications The qualified candidate will be current faculty at an accredited 4-year university or 2-year college.

Application Requirements

A complete application consists of:

- Zintellect Profile
- Educational and Employment History
- Essay Questions (goals, experiences, and skills relevant to the opportunity)
- Resume (PDF)
- One Recommendation. We encourage you to contact your recommender(s) as soon as you start your application to ensure they are able to complete the recommendation form and to let them know to expect a message from Zintellect. Recommenders will be asked to rate your scientific capabilities, personal characteristics, and describe how they know you. You can

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always log back in to your Zintellect account and check the status of your application.

If you have questions, send an email to AIRFORCE@orise.orau.gov. Please list the reference code of this opportunity AFIT-2025-0019-F in the subject line of the email. Please understand that ORISE does not review applications or select applicants; selections are made by the sponsoring agency identified on this opportunity. All application materials should be submitted via the "Apply" button at the bottom of this opportunity listing. Please do not send application materials to the email address above.

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Point of Contact [Leslie](#)

- Eligibility**
- Requirements**
- **Citizenship:** U.S. Citizen Only
 - **Degree:** Doctoral Degree.
 - **Discipline(s):**
 - **Chemistry and Materials Sciences** ([12](#) )
 - **Communications and Graphics Design** ([2](#) )
 - **Computer, Information, and Data Sciences** ([16](#) )
 - **Earth and Geosciences** ([21](#) )
 - **Engineering** ([29](#) )
 - **Environmental and Marine Sciences** ([14](#) )
 - **Life Health and Medical Sciences** ([45](#) )
 - **Mathematics and Statistics** ([10](#) )
 - **Other Non-Science & Engineering** ([2](#) )
 - **Physics** ([16](#) )
 - **Science & Engineering-related** ([1](#) )
 - **Social and Behavioral Sciences** ([27](#) )

Affirmation I affirm that I am a current faculty member at an institution of higher education.