Goddard Planetary Heliophysics Institute

PHaSER Open House 2024

GPHI:

- **Established in 2011**
- **Currently 21 faculty under the NASA's PHaSER Cooperative Agreement**

Opportunities at UMBC

- Research collaboration with UMBC faculty
  - A dedicated meeting room for center-based faculty is located in the Physics Department
- Working with students or mentoring
- Teaching
- UMBC internal (faculty only) funding opportunities
  - CIDER
    - Specifically for center-based UMBC faculty members like those in PHaSER, and only UMBC center-based faculty members can be PIs.
    - In addition to a required Co-I from a UMBC degree-granting unit, the proposal can include additional Co-Is, such as non-UMBC members of PHaSER or civil servants.
    - Last year, 2 of the 4 awards were to Goddard-based UMBC researchers.

Center and Institute Departmentally-Engaged Research (CIDER) Solicitation

Overview

Award Size: Three awards, $50,000 each, to be spent within 18 months (Spring+Fall+Spring)
Deadline for application: Tuesday, October 15, 2024 (before midnight)
Anticipated notification date: December 2025
Expected project start: January 2025
Contact: ord@umbc.edu

One way **to find prospective partners** for this solicitation is to use the:

- the CIDER Proposal Collaboration Interests Form
- the CIDER Proposal Collaboration Interests Form's Responses (updated in real time)

Goal

The primary goal of this program is to enable those in UMBC's centers and institutes to draw more value from their membership in the broader UMBC community.

Selection Process

A review committee of prior CIDER recipients will be coordinated by the Office of Research Development. This committee will make recommendations to the Vice President for Research and Creative Achievement, who will make the final determination of the awards.

Earth and Space Institute

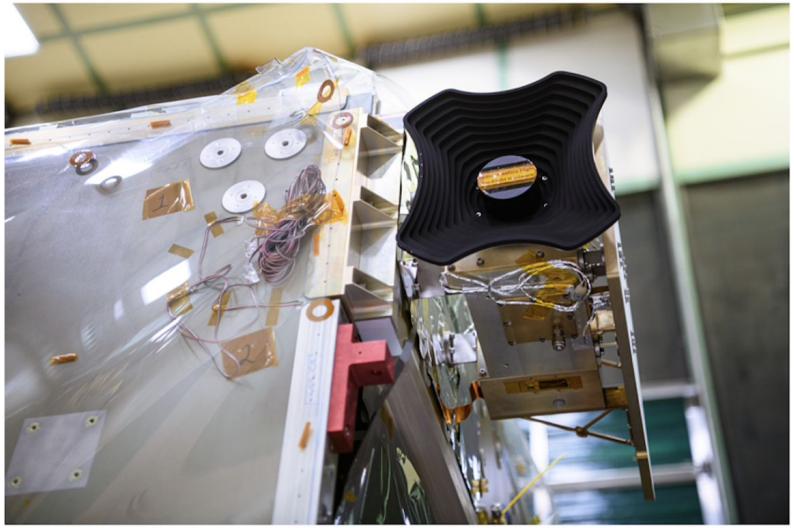
UMBC EARTH AND SPACE INSTITUTE

- ESI was dedicated in September 2017 to develop new science and algorithms, design, development, and testing of satellite, aircraft, and ground-based instrumentation for Earth and Space science observations.
- ESI's goal is to leverage UMBC's faculty, students and physical resources with NASA, NOAA, and private companies to develop competitive Earth and Space science projects.
- ESI Director and PI: **Vanderlei Martins,** Professor, Physics
- *https://esi.umbc.edu*

Congressional Appropriation:
$1,000,000 in FY23

Goals:
– Develop cost-effective satellite, aircraft, and ground-based instrumentation for atmospheric and climate change observations.
– Instrument design, prototyping, calibration
– Science data analysis and algorithm development
– Student training in association with degree-granting institutions

HARP2 on the NASA PACE satellite



UMBC High Perfomance Computing Facility

The UMBC HPCF is the community-based, interdisciplinary core facility for scientific computing and research on parallel algorithms at UMBC.

- Started in 2008 by more than 20 researchers from ten academic departments and research centers from all academic colleges at UMBC, it is supported by faculty contributions, federal grants, and the UMBC administration.
- The facility is open to UMBC researchers at no charge. Researchers can contribute funding for long-term priority access.

- **CPU cluster**: 18 compute nodes with two 24-core Intel Cascade Lake CPUs and 196 GB of memory each and 50 compute nodes with two 18-core Intel Skylake CPUs and 384 GB of memory each.
- **taki GPU cluster** contains one node with four NVIDIA Tesla V100 GPUs connected by NVLink.
- **ada GPU cluster** is comprised of 13 nodes which each have two 24-core Intel Cascade Lake CPUs and 384 GB of memory. Four of these nodes have eight 2080 Ti GPUs; seven of these nodes have eight RTX 6000 GPUs; and two of these nodes have eight RTX 8000 GPUs with an extra 384 GB of memory each. This brings the total number of GPUs to 104.
- The nodes are connected to each other by EDR (extended data rate) InfiniBand interconnect. All nodes of both machines are connected to the same central storage of more than 750 TB.

https://hpcf.umbc.edu/

Further Suggested UMBC Departments' Collaborations

College of Engineering and Information Technology (COEIT)

- **Computer Science and Electrical Engineering**
  - Visualization and Computer Graphics Research is centered in the VANGOGH research lab (formerly known as the Graphics and Visualization Lab (GAVL), VANGOGH stands for: **V**isualization, **A**nimation, **N**on-photorealistic **G**raphics, **O**bject modeling, and **G**raphics **H**ardware). https://vangogh.umbc.edu/
  - the largest department on campus in terms of undergraduate and graduate students. CSEE research spans areas in Computer Science, Computer Engineering, and Electrical Engineering like Artificial Intelligence and Machine Learning, Quantum computing, Data Science, Cybersecurity of Hardware, Software, and Systems, Photonics, VLSI, Graphics and Visualization, Wireless, Mobile and Sensor systems, Signal Processing and Theory.
- **Information Systems** - research is focused in artificial intelligence / knowledge management, database/data mining, health information technology, human-centered computing, software engineering, and other areas.

College of Natural and Mathematical Sciences

- **Mathematics & Statistics**
- **Physics**