



University of Miami, Physics Department Colloquium

Date: Wednesday, Nov 5, 2025
Time: 4:00 pm – 5:00 pm
Location: Physics Library – Rm 335, Knight Physics Building

Space Weather from a Lunar Outpost

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Abstract

Earth, and our local space environment, reside within the atmosphere of the sun. This geometry and the dynamics of our star have profound implications for our local space weather. This interface is rich with challenging plasma physics problems, but it also impacts human usage of the space environment. Sometimes this can be moderate. Sometimes this can be extreme, with devastating effects from major geomagnetic storms. One way to understand the development of geomagnetic storms is to measure the boundary of Earth's magnetic field. This talk explores developing techniques for imaging local boundaries in space with soft x-rays to understand the development of geomagnetic storms. The talk will provide a tour of this advancing technology through recent measurement by LEXI from the lunar surface as part of NASA's commercial lunar payloads services program and its planned use in upcoming missions such as SMILE scheduled for launch in 2026.

Biography

Brian Walsh is an experimental astronomer and engineer at Boston University. His research career began as a PhD student in astronomy at Boston University studying plasma acceleration in near-Earth space. After finishing a PhD he embarked on a nation-wide circular path, first moving south along the east-coast to NASA Goddard, then west to SSL/Berkeley, then back east to Boston University where he has been for the past 10 years, conducting research and teaching in the Mechanical Engineering department and Center for Space Physics. His research focuses on solar wind magnetospheric coupling and x-ray instrumentation.