MONTANA STATE UNIVERSITY | College of LETTERS & SCIENCE

Physics Colloquium

Friday, April 22nd
4:10 – 5:00 PM
Barnard Hall 103

Enabling new observations of diffuse astrophysical emission with sate-of-the art grating technology

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Abstract:

Recent developments in diffraction grating technology can enable new space-based instruments and advance our understanding of radiation-emitting processes throughout our Universe. This talk will present the state of the art in reflection grating fabrication in the context of technology development for future NASA missions, and highlight performance advancements over traditional grating technologies. An emphasis is placed on gratings capable of high diffraction efficiency, which help enable new observations of faint, diffuse sources that are not achievable with currently operating instruments. A currently funded suborbital application, the Rockets for Extended-source X-ray Spectroscopy (tREXS), uses a large-format array of modern gratings to combine a large field of view and moderate spectral resolution to make new observations of diffuse, X-ray-emitting plasmas. The tREXS mission and grating spectrograph will be presented along with simulated observations of tREXS' first observation target, the Cygnus Loop supernova remnant. The talk will close with a brief overview of the FIREBall-2 balloon project, a UV multi-object grating spectrograph designed to directly observe emission from the circumgalactic medium.

Host: John Sample

**** Refreshments served in the Barnard second floor atrium at 3:45 ****