

Physics Colloquium By Shaw Laureate

The Far Ultraviolet diffuse background



Nov 15, 2024 (Fri)



CYCP1, LG1/F, CYM
Chemistry Building
Main Campus, HKU



2: 30 p.m.



Prof. Shrinivas R. Kulkarni
*Shaw Laureate of
The Shaw Prize in Astronomy 2024*

Abstract:

Historically, the search for the inter-galactic medium (IGM) motivated the search for the Far Ultraviolet (<0.2 micron; FUV) background which in turn led to a number of experiments and missions. Decades later the focus shifted to FUV as the primary heating and ionizing agent of the atomic phases (warm and cold neutral medium). On the observational side, it was realized that at high Galactic latitudes, the diffuse FUV has three components: FUV light from hot stars in the Galactic plane reflected by dust grains (diffuse galactic light or DGL), FUV from other galaxies (extra-galactic background light, EBL) and a component of unknown origin. This view has been amply confirmed by later GALEX observations.

During the eighties, there was considerable discussion that decaying dark matter particles produced FUV radiation. In my talk I systematically investigate production of FUV photons from all major sources capable of producing FUV emission. I conclude that two thirds to perhaps all of the third component can be explained by the sum of Galactic Hot Ionized Medium (line emission), two photon emission from the Warm Ionized Medium, low velocity shocks in the Galaxy and Lyman fluorescence in the Solar System (the interplanetary medium and the exosphere of Earth).

Biography:

S. R. Kulkarni obtained his undergraduate degree from the Indian Institute of Technology, Delhi and his PhD from UC Berkeley. He served a brief period as a postdoc at UC Berkeley and Caltech before joining the faculty rank at Caltech in 1987. Currently, he is the George Ellery Hale Professor of Astronomy at the California Institute of Technology.

Kulkarni's primary interests are the study of compact objects (neutron stars and gamma-ray bursts) and cosmic explosions. He is keenly interested in developing or refining astronomical methodologies.

Kulkarni is a fellow or member of the following learned societies: the American Academy of Arts & Sciences, the Royal Society of London, the US National Academy of Sciences, Indian Academy of Sciences and the Royal Netherlands Academy of Arts and Sciences (KNAW).

Kulkarni's awards include NSF's Alan T. Waterman Prize of the NSF, a fellowship from the David and Lucile Packard Foundation, a Presidential Young Investigator award from the NSF, the Helen B. Warner award of the American Astronomical Society, the Jansky Prize of Associated Universities, Inc, the Dan David Prize and the Shaw Prize.



DEPARTMENT OF PHYSICS
THE UNIVERSITY OF HONG KONG



Joint Colloquium of Department of Physics and Laboratory of Space Research

Anyone interested is welcome to attend.

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