



**DEPARTMENT OF PHYSICS AND PHYSICAL
OCEANOGRAPHY COLLOQUIUM**

“Students Simulating Stars on Supercomputers”

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Computational physics has played an increasingly important role in our understanding of the stars, galaxies and the Universe. With the current generation of supercomputers now capable of petaflop speeds, problems that were unimaginable only a few years ago are now producing exciting insights and discoveries. The result is a greatly expanded range of problems that can be approached through computation and significantly improved fidelity of those models. Moreover, supercomputers represent a high-end technology accessible by undergraduate students. This talk will illustrate how physics students can take their physics knowledge out of the classroom and leverage the power of supercomputers to accomplish cutting-edge research. I will present examples ranging from the classic problem of hydrodynamic accretion onto a star (first described by Hoyle and Lyttleton in 1939 as an explanation for climate variation), to mass transfer in compact binary stars like Her X-1, the formation of 'fingers' in the circumstellar ring surrounding supernova 1987A, and the discovery of a new mechanism for spinning up the central pulsar during a supernova explosion.

Friday, November 13, 2009

2:00 PM

DeLoach Hall, Room 212

Refreshments will be served at 1:45 PM

