



PHYSICS AND ASTRONOMY COLLOQUIUM

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“Radiation-Dominated Black Hole Accretion Flows”

Abstract

At high accretion rates, the outward force of radiation pressure generated by energy released by infalling matter can exceed the inward pull of gravity. Such super-Eddington accretion flows occur in many systems, such as the inner regions of quasars and luminous AGN, ultra-luminous X-ray sources (ULXs), and tidal disruption events. Understanding such flows is important not only for interpreting the spectra and variability of these sources, but also to predict the rate of growth of black holes in the early universe, and to quantify energy and momentum feedback into the medium surrounding the black hole, a process likely to be important in galaxy formation. New results from a study of the magnetohydrodynamics of luminous accretion flows, in which radiation pressure dominates, will be presented. Our results reveal new physical effects, such as turbulent transport of radiation energy, that require extension of standard thin-disk models. We discuss the implications of our results for the astrophysics of accreting black holes.

Wednesday, January 23, 2019

3:30 p.m.

Elliott Building Room 167