Astrophysics Seminar Monday, November 20, 2017

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Boston University

Journey to the center of the Galaxy: Following Gas Accretion from Hundreds of Parsecs to the Black Hole

The central 300 pc of the Milky Way is a reservoir of hot and turbulent dense gas that surrounds, and may in the future feed, a quiescent supermassive black hole. Fully constraining the physical conditions of this gas is critical for



understanding how this central gas concentration will evolve, and influence future nuclear activity. I will present the results of recent work that follows the changes in physical properties of this gas as it approaches the black hole; increasing in temperature, density, and turbulence, while largely resisting the onset of star formation. One of the greatest challenges in relating the physical conditions of the gas with its location in the central potential is our edge-on view of this region, which complicates the determination of 3D positions. I will highlight the development of proxies for Galactocentric distance in this environment, and how these can be used to test of current orbital models. Our current best understanding of the 3D gas distribution indicates that there are currently several bottlenecks to accretion, where gas accumulates into dense rings. I will address the evidence for these being persistent features, and prospects for observations to identify and measure the gas flow through these boundaries. Finally, I will preview the advances in our understanding of gas accretion in nuclei that are now possible via comparisons to high resolution ALMA observations of the center of NGC 253, a galaxy with an order of magnitude more star formation and molecular gas, where this gas is not only accreting but also outflowing.

3:30pm in CAS 502. Refreshments served at 3:15pm in CAS 500.





Next Week Charles Steinhardt Niels Bohr Institute

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