



University
of Victoria

PHYSICS AND ASTRONOMY COLLOQUIUM (In Person & Online)

Dr. Mark Voit
MSU

“Baryon Cycles in the Biggest Galaxies”

Abstract

“The universe’s biggest galaxies have both vast atmospheres and supermassive central black holes. Coupling between those two components of a large galaxy couple regulates the galaxy’s star formation rate. Models of interactions between a supermassive black hole and the large-scale atmosphere suggest that the energy released as cold gas clouds accrete onto the black hole suspends the atmosphere in a state that is marginally stable to formation of cold clouds. A growing body of observational evidence indicates that many massive galaxies, ranging from the huge central galaxies of galaxy clusters down to our own Milky Way, are close to that marginal state. The gas supply for star formation within a galaxy in such a marginal state is closely tied to the galaxy’s central potential well, as traced by the central velocity dispersion of its stars. Those findings suggest that energy released during black-hole accretion shuts down star formation when the central potential well depth exceeds a critical value determined by the galaxy’s supernova heating rate.”

Wednesday, March 8, 2023

3:30 p.m. PST

ECS 116

Zoom link available on Uvic Event Calendar