

# SEMINAR IN PHYSICS

Friday, February 8, 2019

3:30-4:25 • Ross 0220 • Refreshments



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## The Mysterious Connection Between Galaxies and Supermassive Black Holes

The classic dilemma ‘which came first: the chicken or the egg’ can very well be applied to the evolution of galaxies in the Universe. We are now convinced that all galaxies harbor supermassive black holes at their centers, but how did these black holes get there and why? In Active Galactic Nuclei (AGN) those monsters are actively “snacking” on stars and gas. Gas and matter falling into the gravitational potential of a black hole is one of the most efficient energy conversion mechanisms in the universe responsible for the extreme luminosities of AGN. The light produced by accreting supermassive black holes often outshines the entire galaxy itself.

How and why some galaxies have active nuclei is a question of fervent scientific research. Recent findings strongly suggest that violent collisions between normal spiral galaxies of comparable size might be responsible for fueling the nucleus and igniting AGN. My research interests are in the evolution of some of the brightest galaxies in the universe, the quasars. In my talk, I will present our current knowledge of quasars, the leading models which attempt to explain the observations, and how my particular research contributes to our understanding of quasar formation in the large scheme of galaxy evolution.

*Dr. Lazarova is an observational astronomer using space- and ground-based telescopes to study the place of quasars in galaxy evolution. She received her Ph.D. in Physics in 2012 from the University of California-Riverside. In her work, she uses the Hubble Space Telescope, the Spitzer Space Telescope and the Keck telescope in Hawaii. Prior to joining UNC in the Fall of 2018, she was on the faculty of Pomona College, Colorado College, and the University of Nebraska at Kearney. She is very passionate about outreach (so ask her about making a difference in the world by promoting scientific literacy to youth). Her other passions in life include having fun with her kids, hiking, and photography.*