Andrea Vang

**Award:** WSGC Graduate and Professional Research Fellowship; $5000.00

**Status:** Ph.D., Astronomy

**Advisor:** Marsha J. Wolf

**Research Topic:** A 3D View into the Co-Evolutionary History of Galaxies and AGN

**Abstract:** (First Paragraph of Proposal) Our research project aims to study whether there is a connection between radio active galactic nuclei (AGN) and star formation (SF) activity by analyzing observational signatures of AGN feedback and its viability as the mechanism for truncating SF in galaxies. Feedback, a process by which gas is expelled or heated too much for new star formation to occur, is required in galaxy formation simulations to truncate SF and form galaxies with properties that we observe today (Springel+ 2005, Dekel & Birnboim 2006, Hopkins+ 2006). Winds from AGN or supernovae after a burst of new SF can blow out circumnuclear gas, suppressing SF. New spatially resolved galaxy surveys utilizing integral field spectra are finding galaxy outflows to be much more common than previously believed (Diamond-Stanic+ 2016, McElroy+ 2016), supporting the idea that feedback is an important ingredient in galaxy evolution. AGN are a potential source of this feedback, which would mean they are affecting the evolution of galaxies. Yet, the timing of star forming and AGN phases are not well known and as of today we do not have a complete understanding of the connection between AGN and SF. The goals of our project focus on the relationship between the supermassive black holes and their host galaxies through their active phases to understand the role of the AGN in the host galaxy's evolution, from the triggering of the AGN to its dormant quiescence phase. This research project will span three years and the results of this project would serve as the foundation for my dissertation at the University of Wisconsin-Madison under the guidance of my advisor, Dr. Marsha Wolf.

**Biography:** Andrea Vang is an Astronomy graduate student studying galaxy evolution at the  
University of Wisconsin-Madison. Specifically, her research focuses on studying the relationship between active galactic nuclei (AGN), the active supermassive blackhole at the center of a galaxy, and star formation. She studies the radio spectrum of a galaxy, which gives clues to the AGN history, and compares it to the star formation history obtained from the optical spectrum. This would allow a better understanding on how the AGN affects galaxy evolution, specifically its star formation.

**Congressional District:** 2

**Congressional Representative:** Mark Pocan