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**SIMULATIONS OF EMISSION LINES FROM THE NARROW LINE REGION IN SEYFERT GALAXIES**

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General Abstract

One of the biggest questions in astronomy and astrophysics is “How do galaxies form?” Because of the large time scales involved in the formation of galaxies, the only way to learn about the formation of galaxies is through studying galaxies outside the Milky Way by observation and simulation. In the late 20th century astronomers began observing and investigating galaxies that contain supermassive black holes in their center that produce more light than all of the stars within the galaxy. These galaxies host active galactic nuclei (AGN). To model the narrow line region in AGN, scientists use emission line ratio diagrams and compute a curve that recreates the Spectral Energy Distribution (SED) of the narrow line region. [THE PREVIOUS SENETENCE HAS A FEW THINGS MIXED AROUND. WE HAVEN’T BEEN MAKING EMISSION LINE RATIO DIAGRAMS YET WE’RE STILL COMPUTING THE INCIDENT SPECTRAL CURVE. DIAGRAMS CAN *CONSTRAIN* THE SED BUT WE HAVEN’T MADE THAT STEP YET] The SED can be empirically parametrized using spectral indices, which determine the slopes in different areas of the curve. The aim of this research is to synthesize a regression model with data from previous research that will compute all the spectral indices based on one index. Using the program Cloudy, the model will produce a set of emission lines that we compare to observational data to determine its efficacy.

[THE BIG PICTURE COMMENT HERE, IS THAT LESS HISTORY IS NEEDED AND MORE METHODS AND RESULTS. YOU NEED AT A LEAST ONE RESULT WITH CLOUDY, MORE PREFERABLY MANY MORE, TO HAVE YOU ABSTRACT ACCEPTED. WHAT RESULTS DO YOU ENVISION HAVING IN THE NEXT TWO MONTHS?]