

# Various Quantitative Relationships Between in-situ Parameters of a Sample of Quasars and Variables Associated With the Emitted Electromagnetic Radiation of This Sample

Cavener, Christian (School: Joplin High School)

A quasi-stellar radio source, or quasar, is a type of active galactic nucleus (AGN). Quasars are important tools in helping astrophysicists better understand the formation and evolution of galaxies. This project focused on analyzing the data of a sample of quasars contained in Grier et al. 2019 and the Sloan Digital Sky Survey (SDSS) and given by two different mathematical expressions. The goal was to find and briefly discuss various quantitative relationships between two sets of the data: in-situ parameters of the sample of quasars and variables associated with the emitted electromagnetic (EM) radiation of the sample. All of the quantitative relationships in all photometric bands had p-values below 0.05, meaning that all of the quantitative relationships in all photometric bands were statistically significant. Correlation coefficients and absolute values of coefficients of determination were higher and p-values were lower for quantitative relationships between in-situ parameters and spectral flux density than for quantitative relationships between in-situ parameters and magnitude. In-situ parameters were directly correlated with spectral flux density, and in-situ parameters were inversely correlated with magnitude.