THE CORRELATION AND UNDERLYING DISTRIBUTION OF LUMINOSITY FOR FR1 AND FR2 RADIO GALAXIES. Hatfield, Noel-Storr*, Baum*, O'Dea*, Center for Imaging Science, Insight Lab, *kmh2507@rit.edu*

Radio galaxies are types of active galaxies that are very luminous at radio wavelengths. The defining features of a radio galaxy are the twin lobes, guided by high-energy particles and magnetic fields, that project perpendicularly from the nucleus of the galaxy. The galaxies are categorized as either FR1 or FR2 based on the Fanaroff-Riley classification system. The lobes of the FR1 sources start very bright at the center of the galaxy and become fainter as they travel outward while the FR2 sources start very faint at the center of the galaxy and become brighter as they travel outwards eventually collecting at a hotspot. From previous research by RIT student Shawn Staudaher, it was found that the FR classification system can be applied to infrared luminosities as well as radio luminosities. Statistical values such as the Kendall Tau Coefficient and Spearman's Rho give the probability of a correlation existing between two sets of data. To get accurate values, a program known as ASURV, Astronomy SURVival Analysis, needs to be used. This program includes the upper limits of the data into the calculations. An upper limit is the lowest luminosity that was recorded from an exposure. When a galaxy is known to exist in a field of view, but was not detected it is assigned an upper limit. If a correlation exists between two sets of data, then they could be part of a larger population or distribution. These tests were run between the FR1 and FR2 galaxies on various wavelengths and it was found that there were multiple occasions where correlations do occur. A factor that could have influenced the results was the number of data points that were available because as the number of points decrease from 30, the statistical values become less precise.