Spectral variability of the CGCG 077-102 NED02 galaxy: connection between the emitting and absorbing regions and the environment in a rich cluster intracluster medium

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A better grasp of how an AGN-normal pair evolved with different properties within a rich cluster of galaxies will lead to a better understanding of AGN evolution in a dense galaxy environment. To this end, we have monitored the prominent lines in the visible band from the AGN in an unusual AGN-normal galaxy pair -- known as CGCG 077-102 NED01/NED02 -- embedded deep in the gravitational well of the Abell 2063 cluster (z ~ 0.036). Both galaxies are spirals, yet only one of the pair contains an AGN. We took 27 time-series exposures (each >= 900 s) of the NED01/NED02 pair. From the summed optical spectral data for each night of observation, we recorded the spectral line intensities (via the equivalent width) for the NED02 NII/Hα complex emission centered @ 680 nm (observed frame), the NED02 SII doublet emission @ 697 nm, and the NED01 Hα absorption feature @ 678 nm. To focus particularly on the variability of NED02, the active galaxy in the pair, we re-weighted the NED02 equivalent widths by the ratio of the NED02 continuum vs the NED01 continuum about the line energies. We also performed a cross-correlation analysis on the different line equivalent widths. Correlating the intensity of different spectral lines gives insight into how a galaxy's black hole (and its spin) influences the flow of the surrounding ICM gas. Here we will report our analysis results that demonstrate a connection between the emitting and absorbing regions and the environment that has survived ram pressure stripping in a rich cluster intracluster medium environment.