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Using Very Large Array data to Image and Analyze Ultra-Diffuse Galaxy AGC 749251

Ultra-diffuse galaxies (UDG) are an active area of research in Astronomy, since their stars appear too spread out relative to typical galaxies. Moreover, some UDGs appear to have more than typical amounts of dark matter. Some of these galaxies are rich with neutral Hydrogen which we can detect, as it has an emission line of 21 cm. We use the Very Large Array (VLA) to collect data from these emission lines, and the data was manually reduced and used to create a “3D” radio image of the galaxy in relation to its position in the sky. From these "3D" images we also created 2D maps (moment 0 maps) and maps of the motions of the gas, and from this a creation of a rotational velocity map. Using these measurements of rotation speed at different radii, we may be able to measure the amount of dark matter in AGC749251. This is important since if we can explain how galaxies with far-separated stars act and move, perhaps we can further explain how dark matter works within not just UDGs, but galaxies overall.