

WIU CENTENNIAL HONORS COLLEGE
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Abstract

Poster

Major: physics

Faculty Mentor(s): Esteban Araya

A Search for Hydroxyl Emission in the Orion Nebula

Gabriel Sojka

Spectroscopy is an important tool to study star formation. Similarly to how an atom can emit spectral lines due to an electron changing energy levels, molecules can also emit spectral lines due to transitions between energy levels. One example is the 6.035 GHz OH line, which corresponds to a transition of a rotationally excited state. This transition has been detected in regions of high-mass star formation, including in the Orion Nebula. We searched for 6.035 GHz OH at different locations of the nebula, specifically, toward regions with previous detections of OH and a site of 6.7 GHz methanol emission. The data were obtained from the VOLS project (VLA Orion A Large Survey), which is an international collaboration to study the Orion Nebula using the VLA in New Mexico. We report no detection of 6.035 GHz OH toward the methanol emission site, which suggests that the physical conditions that generate the methanol maser are not conducive to excitation of the 6.035 GHz OH line. In the case of sites with previous OH detections, we found weak 6.035 GHz OH emission in one of the fields, however, the signal appears to be part of the point-spread-function of a source outside the field of view of our image. The next step is to image a larger field of view to investigate this detection. This work is based on observations conducted by the VOLS collaboration (P.I. G. Busquet Rico).