

# LWIR Spectro-Polarimeter Cloud Top Observations and Ice-Water Discriminatory Studies

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The University of Arizona Polarization Lab developed an Infrared Channeled Spectro-Polarimeter (IRCSP) to measure linear Stokes parameters with a  $1\mu\text{m}$  average spectral resolution between 8-11  $\mu\text{m}$  [1][2][3]. The IRCSP has demonstrated sensitivity to polarization differences between solid ice and melting ice at a similar brightness temperature in room temperature environments [4]. Updated results demonstrating the IRCSP's ice-water discrimination capabilities will be shown. The first IRCSP high-altitude balloon (HAB) flight resulted in the first known observations of downward viewing polarized thermal radiation from the Earth's atmosphere [4]. The science objective is to improve the retrieval of ice microphysical properties from cloud top thermal polarization observations [5]. An upcoming HAB flight out of Esrange Space Center in Sweden is planned for the summer of 2024.

## References

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