

# Near-Infrared Circular Polarization Survey in Star-Forming Regions: Correlations and Trends

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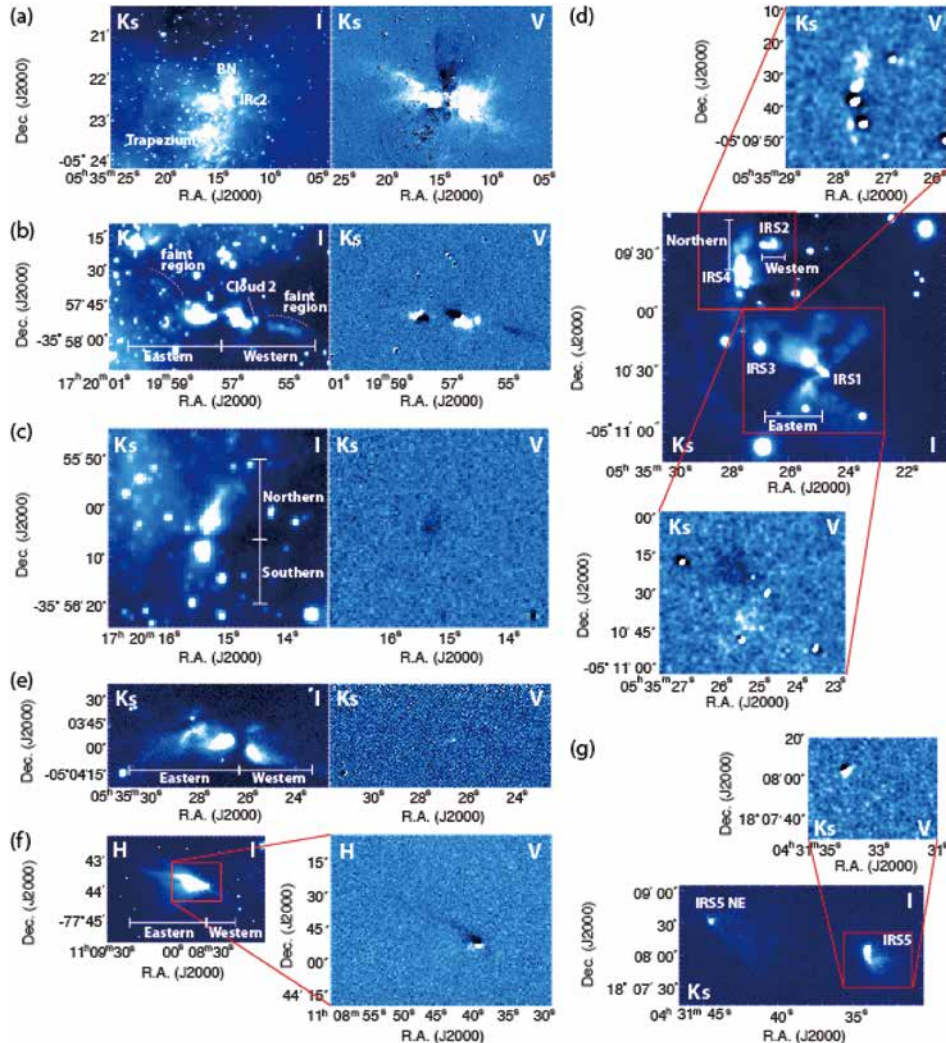
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We have conducted a systematic near-infrared circular polarization (CP) survey in star-forming regions, covering high-mass, intermediate-mass, and low-mass young stellar objects [1]. All the observations were made using the SIRPOL imaging polarimeter on the Infrared Survey Facility 1.4 m telescope at the South African Astronomical Observatory. We present the polarization properties of 10 sub-regions in 6 star-forming regions (Figure 1). The polarization patterns, extents, and maximum degrees of linear and circular polarizations are used to determine the prevalence and origin of CP in the

star-forming regions. Our results show that the CP pattern is quadrupolar in general, the CP regions are extensive, up to 0.65 pc, the CP degrees are high, up to 20%, and the CP degrees decrease systematically from high- to low-mass young stellar objects. The results are consistent with dichroic extinction mechanisms generating the high degrees of CP in star-forming regions.

## Reference

[1] Imanishi, M., Saito, Y.: 2014, *ApJ*, **780**, 106.



**Figure 1:** Stokes I and V images observed from the IRSF 1.4-m telescope. (a) OMC-1 (b) NGC 6334-V (c) NGC 6334-IV (d) OMC-2 (e) OMC-3 (f) Cha IRN (g) L1551. (Credit: KWON, Jungmi)