National Aeronautics and Space Administration

CORE TOMOGRAPHY USING HERSCHEL & GROUND-BASED DATA

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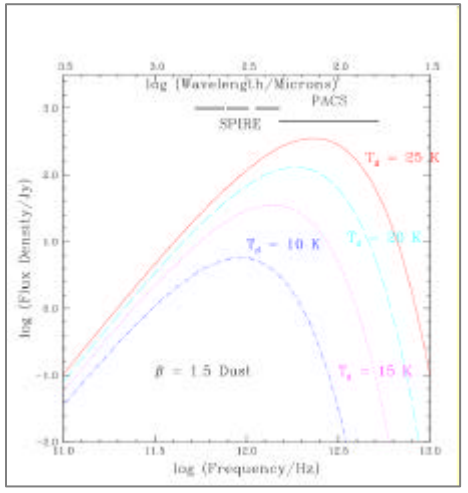
Herschel PACS & SPIRE cover key wavelength range but high resolution ground based maps (CSO SHARC2) important for accurate dust column density retrieval

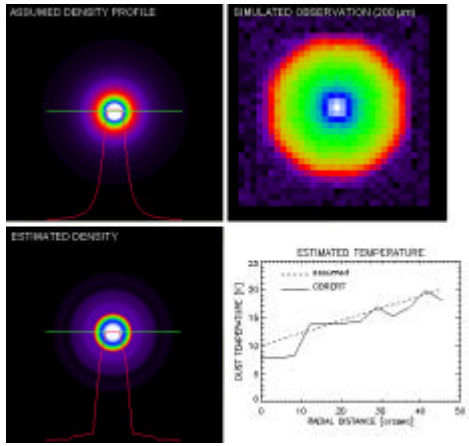
Use JPL COREFIT program to combine multiple wavelength images and obtain n(r) and T(r) with superresolution achieving 3” angular resolution

Will yield improved determination of core masses & Core Mass Function (CMF)

We will add key spectroscopic tracers to determine core kinematics and energy balance

B-field polarization using SHARP on CSO will be used to assess importance of magnetic field for support, and connection to core’s environment





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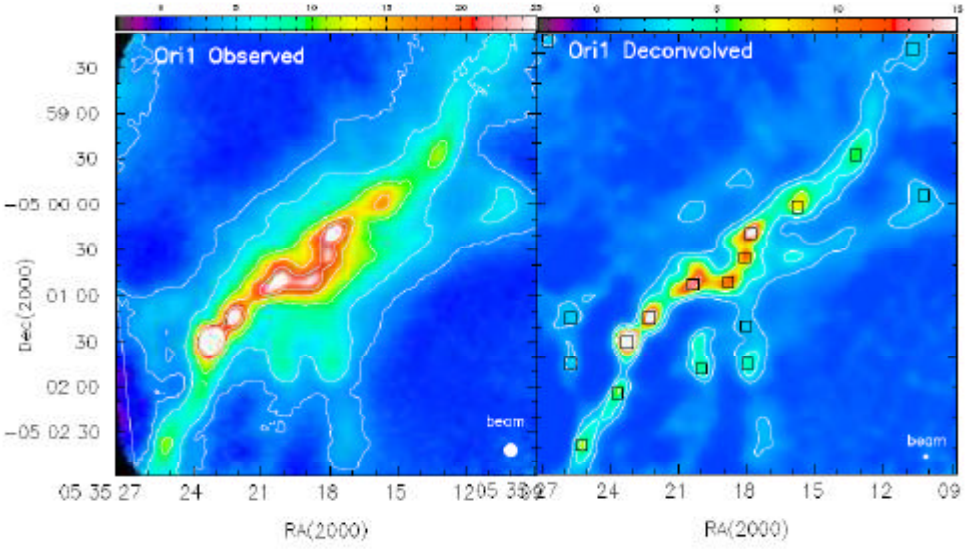
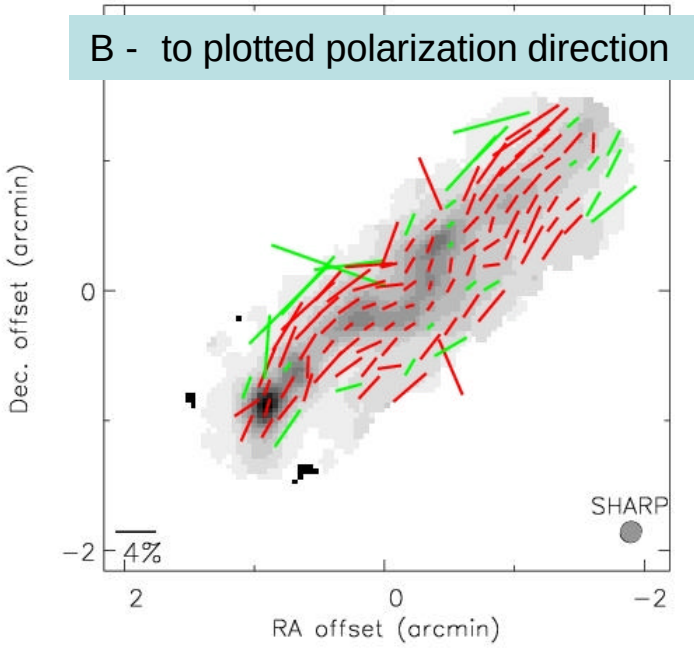


B - to plotted polarization direction



Super resolution requires high signal to noise ratio. Improvement in angular resolution from 9” to 3” offers dramatic improvement in isolating cores and accuracy of mass determination (Li et al. ApJ 655, 2007)

Measurement of magnetic field direction in OMC3 cores using SHARP with SHARC2 on CSO by Dowell, Novak et al. 2007. Necessary for full understanding of core evolution