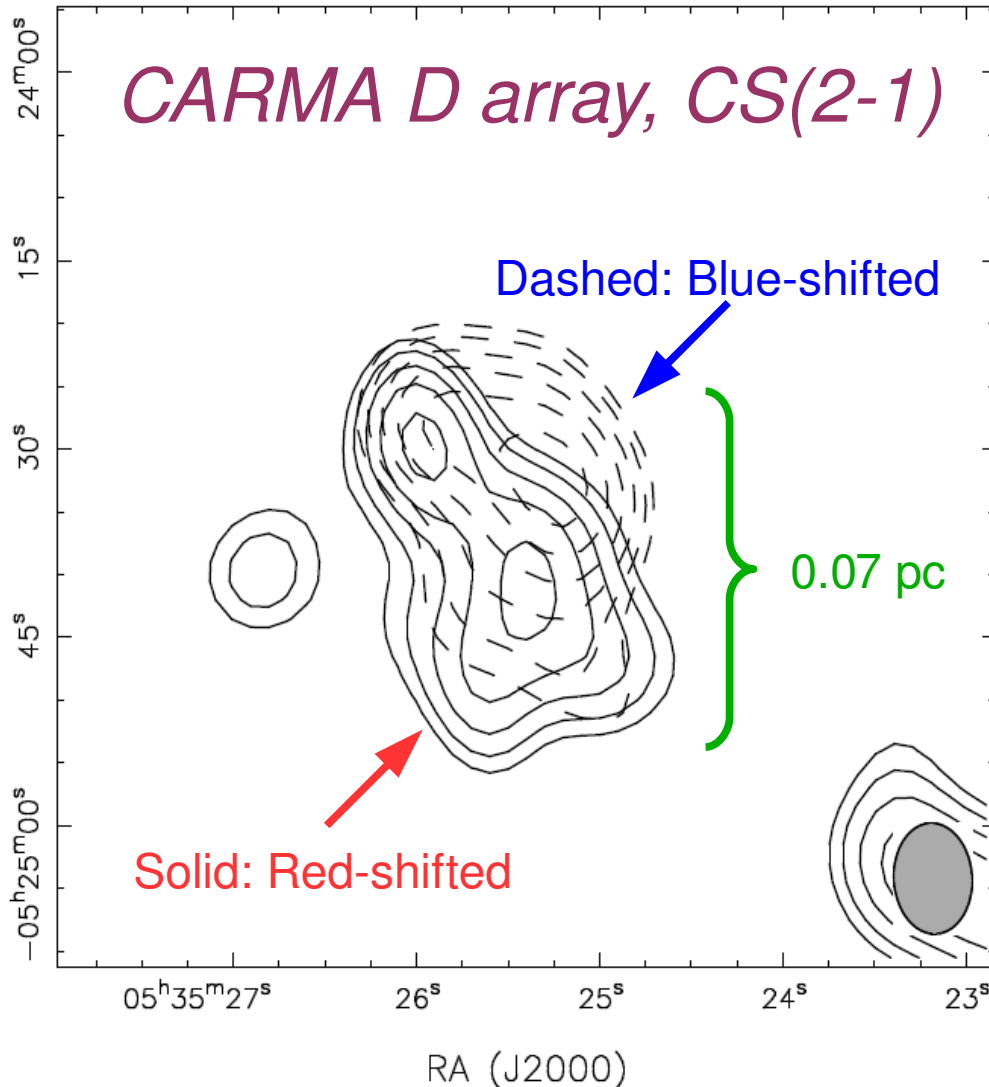


Studying Velocity Gradient in a Starless Core

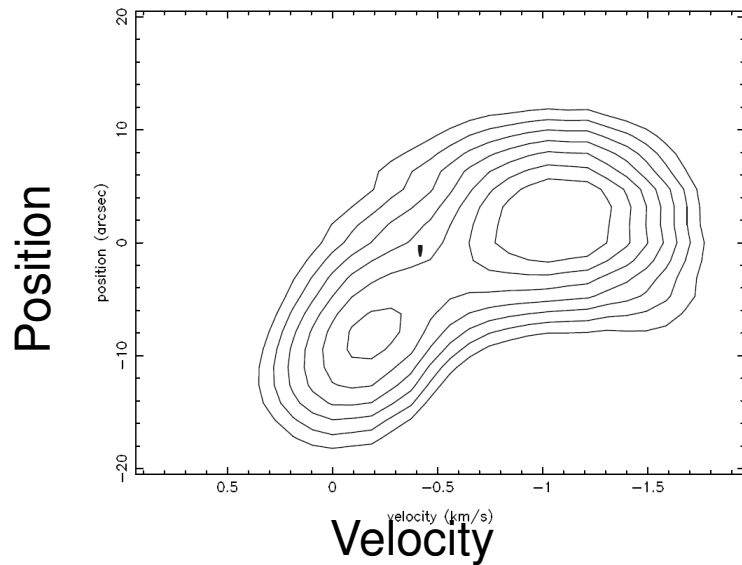
Katherine Lee (UIUC) and Leslie Looney (UIUC)



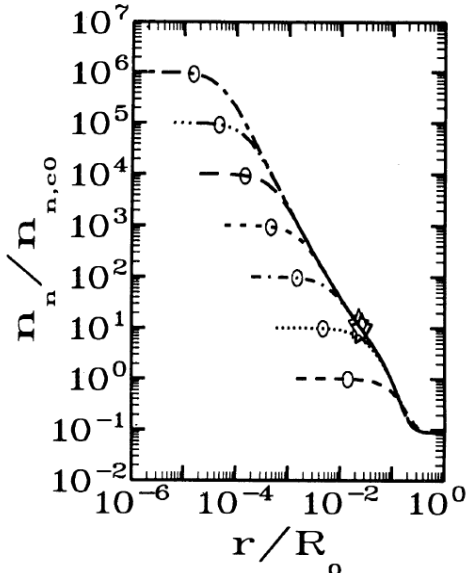
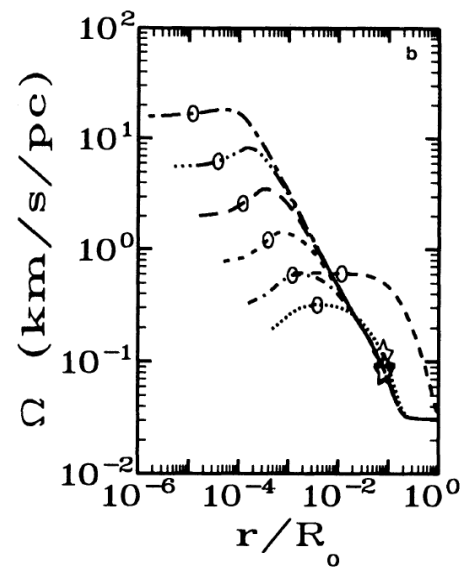
- Source chosen from Nutter & Ward-Thompson 2007 (SCUBA 850 micron)
- Two peaks (blue and red comp.)
- Velocity gradient of 2 km/s over 0.07 pc
- Angular velocity ~ 28.6 km/s/pc assuming solid-body rotation
- $(J/M)_{\text{core}} \propto M_{\text{core}}^2$ (Basu & Mouschovias 1995)
- Theoretical value: 24.7 km/s/pc
- CS(2-1) tracing region with 10^5 cm^{-3}
- Consistent with ambipolar diffusion theory

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