

Infall in starless cores

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Star formation is a highly inefficient process. Some patches of a GMC form stars; most do not. Is there a necessary condition for star formation a core must fulfill? Large area molecular line surveys indicate that starless cores all have column densities less than $8 \times 10^{21} \text{ cm}^{-2}$. A preliminary HCO^+ J=3-2 survey of starless cores, objects of great interest to FIRST, has found that the highest column density cores all have infall motions. We have mapped several starless cores selected from the complete catalog of Lee and Myers (1999) with SCUBA to find their column density. Further observations of these cores in HCO^+ J=3-2, a line particularly sensitive to collapse motions, will determine if a physically meaningful threshold separating quiescent from pre-protostellar cores exists.