[구SF-01] Isolated Star Formation in DC303.8-14.2

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DC303.8-14.2 is an isolated star forming region which has the central proto-star IRAS 13036-7644. We have analyzed the data obtained with the Spitzer Space Telescope toward this core(as part of the c2d legacy project). We combined the Spitzer observations with the near infrared observations and the sub-millimeter dust continuum observation(SEST) in order to model the Spectral Energy Distribution(SED) of this source, using the 1-d radiative transfer code; DUSTY. The SED fitting can provide the knowledge of the characteristic of the central source and the surrounded dusty environment in this core. We have also analyzed the molecular line data observed with the SEST to understand the dynamical and chemical conditions in this region.

[구SF-02] The Velocity Evolution of The Collapsing Bonnor-Ebert Sphere

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We have numerically followed the internal dynamics of a collapsing Bonnor-Ebert(BE)gas sphere, and examined how the radial velocity profile changes as the collapse proceeds. Many authors observed dense cores with various molecular lines, and studied density and velocity fields inside the cores. The observed radial profile of column density resembles that of the BE sphere with varying ξ_{max}, which is the usual dimensionless size parameter of the sphere. From a theoretical study, Kandori et al (2005) have found that, as the collapse proceeds, resulting density profile is similar to the BE sphere having larger ξ_{max}. As far as the density profile is concerned, the empirically determined ξ_{max} could be a good measure of dynamical evolution. However, from the density profile only, it is still unclear whether observed starless cores do follow dynamics of the collapsing BE sphere. In this study we present velocity profiles at a set of selected epochs, or of the dimensionless size parameters. The profiles turnout to maintain a V-shape in the in-falling region. The peak velocities remain to be subsonic, until ξ_{max} reaches about 60. We will present the peak velocities as a function of ξ_{max}. The peak velocities from the simulations are compared with the observationally probed peak velocities for a handful of dense cores. The observed peak velocities are shown significantly faster than that of the collapsing BE sphere, and we will discuss implications of this result.