[P-009/SF-3] A survey of molecular outflows toward the Very Low Luminosity Objects (VeLLOs)

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We report a preliminary survey of molecular outflows from the Very Low Luminosity Objects (VeLLOs; $L < 0.1\ L\odot$) that have been discovered with The Spitzer Space Telescope to study characteristic outflow features in the VeLLOs which may explain their faintness. We selected 12 VeLLOs from Dunham et al.'s study and 59 VeLLOs from clouds in Gould's belt to observe in ^{12}CO(J=2-1),^{1}3CO(J=2-1), and C^{1}8O(J=2-1) lines with the SRAO 6m telescope. Sixty five sources were detected in ^{12}CO(J=2-1) and ^{13}CO(J=2-1) lines, and 38 sources were detected in C^{1}8O(J=2-1) lines from the single pointing observation. Eighteen sources showing the wing features in ^{1}2CO(J=2-1) line spectrum were mapped with 5 X 5 in 50 arc-second grid in the same molecular line. Among them, 15 sources not only showed the outflow features in the map, but also were mapped with 5 X 5 in 50 arc-second grid in ^{1}3CO(J=2-1) or C^{18}O(J=2-1) lines. In the poster we will present the statistical properties of outflow of the VeLLOs such as the outflow size, mass rate, and time scale, and discuss any difference between outflows of the VeLLOs and protostars.

[P-010/SF-4] Molecular Observations in DC303.8-14.2

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DC303.8-14.2 is an isolated star forming region, which has a 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(ISAAC) 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. We drove the density and temperature profile from the dust modeling based on power law density profiles and the density profile obtained from the inside-out collapse model. We now study the dynamical and chemical conditions of this core by modeling molecular line profiles observed with the SEST, using the density and temperature profiles obtained from the SED modeling. According to our study, this region is still too cold to evaporate CO even at small radii, which is consistent with the dust modeling result. However, the blue stronger asymmetry of the CS ($J = 2 \rightarrow 1$) line profile can be fitted by the inside-out collapse model with an infall radius much larger than what found from the dust continuum modeling, indicative of a faster infall motion compare to the inside-out collapse model.