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Marco Monaci - High Latitude Molecular Clouds chemodynamics using high-resolution multiline spectroscopy

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High latitude molecular clouds (HLMC) with no evidence of star formation and generally clear line of sight are the among the best sites to study the dynamics of the the Cold Neutral Medium (CNM) because of the high spatial sampling offered by their proximity. We focus on MBM 40, a non-star forming diffuse cloud, highlighting principal results using a variety of molecular transitions observed with high spatial (0.01 pc) and velocity (0.07 km/s) resolution spectroscopic maps of selected areas in 12CO, 13CO (1-0), CH, HCO+, H2CO and fully sampled high velocity resolution mapping in 12CO (1-0) from FCRAO. We present a new dynamical analytical approach, considering each profile as a line of sight Probability Distribution Function (PDF) of the turbulence, combind with centroid correlation studies and HI 21 cm observations (GALFA). The relation between dust, molecular and atomic gas is also studied, with new hints on the topological structure of the cloud as reflected in the velocity gradients.

Session Classification: Milky Way