COLUMN DENSITY DISTRIBUTIONS FROM DECOMPOSED MAPS OF STAR-FORMING REGIONS

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Probability distribution functions of mass- (ρ-PDF) and column density (N-PDF) in star-forming regions often display one or multiple power-law tails (PLT) in the high-density range. The correct PLT extraction is of key significance for understanding morphological and dynamical structure of star-forming regions since the PDF properties can be directly linked to the role of different factors in the star formation process: gravity, turbulence, magnetic fields, etc. Many observations indicate that the PLT regime in the N-PDF corresponds to highly fragmented, filamentary regions in a star-forming cloud – thus, it is interesting to compare N-PDFs of small-scale structures extracted in those areas with the N-PDF of the whole cloud. We present analyses of the N-PDFs in Galactic regions of various star-forming activity obtained from *Herschel* data, by use of a novel method (Guang-Xing Li 2022) for decomposion of a map into multiple components containing structures of different size range (scale) and applying the PLT extraction technique by Veltchev et al. (2019, 2024).