Tracing the local morphology of the molecular cloud Rosette using molecular-line and dust-emission data

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High-resolution molecular-line maps of molecular clouds combined with dust opacity data manifest their fractal hierarchical structure traced by local condensations: clumps and cores. The physics of the latter is governed by gravity and supersonic turbulence testified by large non-thermal linewidths scaling with the size. We perform a comparative analysis of the derived properties of clump populations in the molecular cloud Rosette extracted from ^{12}CO and ^{13}CO FCRAO and *Herschel* maps. Two alternative extraction techniques are used: i) GAUSSCLUMPS, which defines clumps as an ensemble of independent objects with Gaussian shapes; and ii) DENDROGRAM, which considers clumps as hierarchical set of embedded structures. Analysis of the scaling relations of basic clump characteristics allows provides some links between the local moprhology in the cloud and its general structure and physics.