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Title

Exploring The Scaling Laws Of Star Formation

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Abstract

Despite the well-established global Schmidt-Kennicutt (S-K) law which already serves as an essential prescription for large scale star formation in modeling and simulating galaxy formation and evolution, its local, spatially resolved version remains a frontier and more fundamental research topic. In this dissertation, the local S-K law has been explored both within individual nearby galaxies and amongst different galaxies. We have investigated the shape and universality of the S-K law, studied the dependence of its properties on the sampling scale, and tested it in the high density regime. In addition to its relation with the molecular gas, we have also studied the statistical properties of H II regions in terms of their luminosity function, size distribution, dust extinction and dust geometry.

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