

Title: The Star Formation Relation For The Galactic Plane

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Abstract: The star formation relation or Schmidt-Kennicutt relation have been studied extensively in various types of galaxies. Recent resolved extragalactic studies looked at the relation on sub-kiloparsec scales and found that the star formation relation breaks down below some spatial scales. For the Milky Way star formation, several studies observed a better correlation between dense gas and star formation rates when studying individual star forming region. To link the study of the Milky Way to those of other galaxies, we examined the star formation relation for a large region of the Galactic Plane using 1.1 mm dust continuum from the Bolocam Galactic Plane Survey as a gas tracer and infrared emission from WISE as a tracer of star formation rate. We started at individual source scale of a few parsec and studied up to a scale of over 100 parsec. The correlation between 1.1 mm and MIR emission increases rapidly as the spatial scale increases up to a certain scale. We found a weak star formation relation at small scales with a large scatter. The relation is stronger at larger spatial scales. We found an average depletion time of around 200 Myr, which is between the usually observed extragalactic depletion time and the depletion time from dense gas observation.