

R05a      **Enhancement of Star Formation by Galactic bar in NGC 6946**

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Inhibition of star formation is suggested by simulations, theory and few observational results. We revisit the physical properties of gas and their relation with star formation under a resolution of giant molecular associations for the first time. The  $^{13}\text{CO}$  (1–0) observations of NGC 6946 were made by Nobeyama 45-m telescope and CARMA. The combined map reaches a resolution of 100 pc. Final map shows that the galaxy contains a stronger bar in the north and a weaker one in the south. The asymmetric bar provides a chance to study the influence of galactic dynamics on star formation.

By comparing with published  $^{12}\text{CO}$  (1–0) map, we found that strong bar is warmer than the weak bar. Indeed, the results of Kennicutt-Schmidt law suggests an enhanced star formation in the strong bar. P-V diagrams suggest that the strong bar is associated with larger velocity jump across the bar than that of weak bar. With the comparisons of clouds properties, we found that the giant molecular clouds in the strong bar are smaller than their velocity dispersion and mass suggest. As a result, they become denser with a shorter free-fall time, namely, ongoing a faster star formation. Our results suggest a promotion of star formation by bar, conflicting with previous studies.