R22a Gas dynamics in M100 revealed from high resolution CO(J=2-1) mapping

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We have created a high resolution ($1'' \sim 80$ pc) ^{12}CO($J = 2 - 1$) map of the typical grand-design spiral galaxy M100, using archival ALMA data that has recently become public. The new map has a 1σ sensitivity to molecular clouds down to 1.6×10^4 $M_\odot$, and reveals unresolved GMCs out to galactic radii of 10kpc. The nuclear velocity structure is consistent with Science Verification 12CO(J=1-0) ALMA data, but also reveals unknown features owing to the high sensitivity and resolution. In particular, we find anomalous velocity components which are not consistent with normal galactic rotation with bar induced flows. We will present the broad properties of CO in this galaxy, and focus on the anomalous velocity component and its origin.