AAS 199th meeting, Washington, DC, January 2002
Session 35. Galaxies I
Oral, Monday, January 7, 2002, 2:00-3:30pm, International Ballroom West

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[35.02] Molecular Gas in the "Taffy" Galaxies (UGC 12914/15)

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We report BIMA CO observations of the Taffy galaxies (UGC 12914/15). High resolution CO(1-0) imaging clearly shows that large amounts of molecular gas follow closely the radio continuum distribution in the "taffy" bridge between the two stellar disks, where the highest HI column densities are observed. The deduced gas kinematics suggest that the gas in the bridge is a result of the direct cancellation of the motion of the HI gas clouds after the counter-rotating and head-on disk collision. It is conceivable that some associations of giant molecular clouds (GMCs) were left behind in a similar way although the chance of direct collision between GMCs is small.

Remarkably, Taffy is a very gas-rich system with M(HI)+M(H_2)~5\times$10^{10}$M$_{\odot}$, but not a bona-fide luminous infrared galaxy (LIG). The global SFE (L_{IR}/M(H_2)) is similar or lower than that of the GMCs in the Milky Way disk, an order of magnitude smaller than those found in most interacting LIGs. In order to estimate the local SFE, we obtain the radio-to-CO ratio map and use the radio continuum emission as an indicator of the far-IR emission. Thus, we can better locate the sites of starburst, accurately characterize their properties, and examine how the active star formation is triggered in different regions (nuclear regions, disks, ring structure and bridges).

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