
Study of CO(3-2)/CO(2-1) line ratio in the disk and tail of prototypical jellyfish galaxy ESO 137-001

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Résumé

Galaxies in rich galaxy clusters are experiencing various environmental processes that significantly affect their evolution, gas content, and star formation. In jellyfish galaxies, ram pressure exerted by hot intra-cluster medium (ICM) efficiently strips the cool, star-forming interstellar matter (ISM) from the galaxy's disks, forming (in some cases long) gaseous tails trailing behind the galaxy. ESO137-001, a jellyfish galaxy in nearby Norma cluster, has a prominent 80kpc-long stripped tail, with multi-phase gas observed in CO, HI, radio continuum, H α , and X-rays.

We study the distribution of molecular gas in ESO137-001 using yet unpublished CO(3-2) data in combination with archival CO(2-1) data from ALMA. By analysing the CO(3-2)/(2-1) line ratios, we explore the excitation conditions and physical properties of molecular gas. Additionally, we study how these properties vary across different regions of the galaxy, from the disk to the first 20kpc of the tail.

Mots-Clés: jellyfish galaxies, CO(3, 2)/CO(2, 1) ratio, cold gas, ALMA

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