Systematic study of the radio MOlecular Hydrogen Emission Galaxies near cluster environments

Author: M. Pommier(1), S. Wag(2), N. Roy(2), A. Marcowith(1), C. Muthumariappan(3), S. Roy(4), et al.

Affiliation:

(1) Laboratoire Univers et Particules de Montpellier (LUPM), Université de Montpellier, CC 072-Place Eugène Bataillon 34095 Montpellier Cedex 5, France
(2) Indian Institute of Science, Bangalore, Karnataka 560012, India
(3) Indian Institute of Astrophysics, Bangalore, Karnataka 560 034, India
(4) National Center for Radio Astrophysics, Ganeshkhind, Pune, Maharashtra 411007, India

Abstract:

Most of the interstellar matter in galaxies occurs in the form of cold neutral hydrogen gas (21-cm line), which is the primary fuel for star formation. The HI 21-cm line in emission or absorption is an essential tool for understanding the kinematics of gases, the overall star formation activities within the galaxies, and their interaction with the environment. In this poster, we will present the first systematic HI study of radio MOlecular Hydrogen Emission Galaxies (MOHEGS). These massive galaxies show high-luminosity H2 emission, coupled with weak PAH emission indicative of a low star formation rate. We will discuss the warm and cold gas interaction in these galaxies as well as the correlation between the radio power, the neutral, and the molecular gas. These results provide a key to understanding the radio jet feedback, interaction of gas, and possible suppression of star formation in massive galaxies.