

# The Behavior of Atomic and Molecular Phase Interstellar Gas in Virgo Spiral under Strong ICM Pressure

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## Abstract

Recently we have studied high-resolution SMA 12CO (2-1) data of two spiral galaxies (NGC 4330 and NGC 4402) that are undergoing active HI stripping in the Virgo cluster. We find strong evidence that the impact of the ram pressure can reach deep into the galactic disk, affecting dense molecular gas. The CO morphology is found to be quite similar to that of HI, which appears to have been reshaped by the external pressure due to the intra-cluster medium (ICM). Intriguingly however, *the two gas phases show very different kinematical structures with distinct velocity gradients, particularly in the side where the HI tail is found.* In this study, using high-resolution HI and CO data, we investigate detailed kinematical properties of interstellar gas in Virgo spiral galaxies undergoing strong ram pressure. We discuss how atomic and molecular gas react differently to the external pressure, resulting in distinct kinematics and consequently distinct star formation activities. In the near future, revolutionary radio instruments (SKA and ALMA) with extremely high sensitivity and superb spatial resolution will allow us to study how environmental processes affect the star formation activities and hence the evolution of galaxies as a function of cosmic time.

