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# Cold gas content in galaxies around the Virgo cluster

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## Résumé

The key components of galaxies are their cold gas content, which acts as fuel for star formation. At the same time, one of the main elements regulating the evolution of galaxies is their environment. A number of physical processes (e.g. ram-pressure stripping, tidal interactions, etc.) can significantly affect the properties of galaxies residing in different environments. Using a unique combination of information on the mass of cold gas (both atomic HI and molecular H<sub>2</sub>) for galaxies in the Virgo cluster and in the surrounding filaments, we study the influence of the environment on regulating the gas content of galaxies in and outside clusters, low-mass groups, and filamentary structures.. We complement the observational analysis with a comparison to predictions from the Galaxy Evolution and Assembly (GAEA) semi-analytic model, which has explicit prescriptions for partitioning the cold gas content in its atomic and molecular phases. We show that galaxies within filaments divide into two populations: those found in groups and those found in isolated galaxies, which have gas properties similar to galaxies in a field. We also show how the distance to the filament axis or the halo mass affects the gas deficit in galaxies.

**Mots-Clés:** galaxy evolution, gas content, environment, galaxy cluster, Virgo cluster

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