# Low energy cosmic rays: regulators of the dense interstellar medium

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Low energy cosmic rays (up to the GeV energy domain) play a crucial role in the physics and chemistry of the densest phase of the interstellar medium. Unlike interstellar ionising radiation, they can penetrate large column densities of gas, and reach molecular cloud cores. By maintaining there a small but not negligible gas ionisation fraction, they dictate the coupling between the plasma and the magnetic field, which in turn affects the dynamical evolution of clouds and impacts on the process of star and planet formation. The cosmic-ray ionisation of molecular hydrogen in interstellar clouds also drives the rich interstellar chemistry revealed by observations of spectral lines in a broad region of the electromagnetic spectrum, spanning from the submillimetre to the visual band. Some recent developments in various branches of astrophysics provide us with an unprecedented view on low energy cosmic rays. Accurate measurements and constraints on the intensity of such particles are now available both for the very local interstellar medium and for distant interstellar clouds. The interpretation of these recent data is currently debated, and the emerging picture calls for a reassessment of the scenario invoked to describe the origin and/or the transport of low energy cosmic rays in the Galaxy.