

Search for hidden baryons through interstellar scintillation

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Cool molecular hydrogen H₂ may be the ultimate possible constituent to the Milky-Way baryonic hidden matter. I will describe a new way to search for such transparent matter in the Galactic discs and halo, through its diffractive and refractive effects on the light of background stars. The light of a background star can be subject to stochastic fluctuations on the order of a few percent at a characteristic time scale of a few minutes. Results from simulations and from a feasibility test performed with the ESO-NTT telescope will be presented. I will show that a mini-survey of a few hours with the telescope of the Vera Rubin Observatory, consisting in filming a single field (in the LMC or the SMC) at the rate of a few images per minute has the unique potential to discover (or exclude) interstellar scintillation due to transparent turbulent clouds in the halo. Complementary observations triggered by the fink broker will then enable us to monitor the sources that undergo scintillation over a long period of time and determine their size, distance and spectrum.

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