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Measuring Ω_M with gamma-ray bursts

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Here, we review the use of the Ep,i-Eiso correlation of GRBs to measure the cosmological density parameter Ω_M. We show that the present data set of GRBs, coupled with the assumption that we live in a flat universe, can provide independent evidence, from Supernovae-Ia, that $\Omega_M \sim 0.3$. We show that current (e.g. Swift, Fermi/GBM, Konus-WIND) and forthcoming gamma ray burst (GRB) experiments (e.g. CALET/GBM, SVOM, Lomonosov/UFFO, LOFT/WFM) will allow us to constrain Ω_M with an accuracy comparable to that currently exhibited by Type Ia supernovae (SNe-Ia) and to study the properties of dark energy and their evolution with time.

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