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Turnaround radius in an accelerated universe for Einstein and for modified gravity

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In an accelerating universe there is a maximum radius above which a shell of test particles cannot collapse and is dispersed by the cosmic expansion. This radius could be used in conjunction with observations of large structures to constrain the equation of state of the universe. We express the turnaround radius in general relativity in terms of the Hawking quasilocal mass and we extend the concept to modified theories of gravity for which the gravitational slip is non-vanishing.

[Based on V. Faraoni, M. Lapiere-Leonard & A. Prain 2015, JCAP 10, 013; V. Faraoni 2016, Phys. Dark Universe 11, 11]

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