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Flattened Velocity Dispersion in Globular Clusters; A Perspective From Modified Gravity Schemes MARIA JIMENEZ, XAVIER HERNANDEZ, CHRISTINE ALLEN, Instituto de Astronomia, Universidad Nacional Autonoma de Mexico — Recent observations have confirmed the flattening of the radial velocity dispersion profiles for stars invarious nearby globular clusters. Under Newtonian gravity this is explained by invoking tidal heating from the overall Milky Way potential on the outer more loosely bound stars. From the point of view of modified gravity theories, such an outer flattening is expected on crossing the critical acceleration threshold a_0, beyond which, a transition to MONDian dynamicsis expected. From an empirical point of view, we determine Newtonian tidal radii using masses accurately calculated through stellar population modeling, and hence independent of any dynamical assumptions for a sample of globular clusters. Crucially, we find that the asymptotic values of the velocity dispersion profiles scale with the fourth root of the total masses in accordance with the galactic Tully-Fisher relation. Also, in all cases, Newtonian tidal radii at perigalacticon are larger that the radii at which the flattening in the velocity dispersion profiles occurs, which correlate with the radii where the a_0 threshold is crossed, as expected under modified gravity scenarios.

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