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Caustic Mass and Modified Gravity

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Extensions to the standard Λ -CDM model have the potential to explain observed cosmological phenomena such as dark matter and dark energy. Measurement of the masses of galaxy clusters using different methods provide a great opportunity to contrast the modifications to gravity against standard GR scenario at small scales (non-cosmological). The Chameleon and Vainshtein screening mechanisms are two promising candidates for modified gravity, which modify the gravitational potential through a fifth force. We evaluate the hydrostatic and caustic mass estimates of 5 galaxy clusters with robust data of the dynamical and kinematic observables, under GR and the screening mechanisms. We aim to apprehend the effect that the screening mechanisms will have on the mass bias while constraining the modified gravity scenarios.

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