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## Velocity dispersion of dark matter deficit ultra-diffuse galaxies: A case for modified gravity

The line of sight velocity dispersion of the ultra-diffuse galaxies (UDGs) NGC1052-DF2 and NGC1052-DF4 have been reasonably explained only with the baryonic matter, without requiring any dark matter contribution.

The comparable ratio between the baryonic and halo mass also ascertain the above claim for the two dark matter deficit galaxies. This paves the way for analyzing alternative gravity theories such as the f(R) gravity and the Renormalization Group correction to General Relativity (RGGR). The analysis of the line of sight velocity dispersion shows that the choice of f(R) gravity models such as Taylor expanded f(R) about R = 0 or a simple power law model of choice  $R^n$  is consistent with the observational data. Similar statistical analysis is done for the RGGR and is also found to be a viable explanation for the observed velocity dispersion. We perform a global fit of the model parameters together with both the UDGs. The coupling parameters of the theories are considered as the global ones, and local variables such as the scale parameters are considered to be dependent on the individual galaxy.

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