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PRGS and the TF Relation: Implications for the DH Shape

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Abstract We have investigated the Tully-Fisher relation for Polar Ring Galaxies (PRGs), based on near infrared, optical and HI data available for a sample of these peculiar objects. The total K-band luminosity, which mainly comes from the central host galaxy, and the measured HI line width at 20% of the peak line flux density, which traces the potential in the polar plane, place most polar rings of the sample far from the Tully-Fisher relation defined for spiral galaxies, with many PRGs showing larger HI line widths than expected for the observed K band luminosity. This result is confirmed by a larger sample of objects, based on B-band data. This observational evidence may be related to the dark halo shape and orientation in these systems, which we study by numerical modelling of PRG formation and dynamics: the larger rotation velocities observed in PRGs can be explained by a flattened polar halo, aligned with the polar ring.