

Abstract Submitted
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The Luminous Convolution Model for Galaxy Rotation Curves

SHANON RUBIN, MARIA MUCCI, Boston University, SOPHIA CISNEROS COLLABORATION, KENNARD CHNG COLLABORATION, MEAGAN CROWLEY COLLABORATION — The LCM takes as input only the observed luminous matter profile from galaxies, and allows us to confirm these observed data by considering frame-dependent effects from the luminous mass profile of the Milky Way. The LCM is useful when looking at galaxies that have similar total enclosed mass, but varying distributions. For example, variations in luminous matter profiles from a diffuse galaxy correlate to the LCMs five different Milky Way models equally well, but LCM fits for a centrally condensed galaxy distinguish between Milky Way models. In this presentation, we show how the rotation curve data of such galaxies can be used to constrain the Milky Way luminous mass modeling, by the physical characteristics of each galaxy used to interpret the fitting. Current Investigations will be presented showing how the convolved parameters of Keplerian predictions with rotation curve observations can be extracted with respect to the crossing location of the relative curvature versus the assumption of the luminous mass profiles from photometry. Since there currently exists no direct constraint to photometric estimates of the luminous mass in these systems, the LCM gives the first constraint based on the orthogonal measurement of Doppler shifted spectra from characteristic emitters.

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