

Abstract Submitted  
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**The Light Side of Dark Matter**<sup>1</sup> SOPHIA CISNEROS, MIT — We present a new, heuristic, two-parameter model for predicting the rotation curves of disc galaxies. The model is tested on (22) randomly chosen galaxies, represented in 35 data sets. This Lorentz Convolution [LC] model is derived from a non-linear, relativistic solution of a Kerr-type wave equation, where small changes in the photon's frequencies, resulting from the curved space time, are convolved into a sequence of Lorentz transformations. The LC model is parametrized with only the diffuse, *luminous* stellar and gaseous masses reported with each data set of observations used. The LC model predicts observed rotation curves across a wide range of disk galaxies. The LC model was constructed to occupy the same place in the explanation of rotation curves that Dark Matter does, so that a simple investigation of the relation between luminous and dark matter might be made, via by a parameter ( $a$ ). We find the parameter ( $a$ ) to demonstrate interesting structure. We compare the new model prediction to both the NFW model and MOND fits when available.

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