The Light Side of Dark Matter\textsuperscript{1} 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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