Synthetic Observations of Rotation Curves and the Properties of Disk Galaxies.

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Abstract. We performed synthetic observations of a disk galaxy MHD simulation in order to study the effects of non-circular motions due to spiral structure on the modeling of the mass distribution of the galaxy. We found that the methods tested (slit spectroscopy and ring-averaged velocities) yield rotation curves that are systematically above the circular velocity corresponding to the imposed background potential. When mass models are fitted to the measured rotation curves, the resulting total mass is similar to that of the background potential, but the fit yields more centrally concentrated mass distributions.



Figure 1. The measured rotation curves (*solid lines*) obtained emulating slit spectrography (*top*) and ring-averaged velocities (*bottom*) are compared with the rotation corresponding to the imposed background potential (*dotted line*). The rotation curves for the fitted halo model (*dashed lines*) are also shown. The observed rotation is systematically above the corresponding to the background potential.