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Discovery and Implications of Vertical Waves in the Galactic Disk

I report on the observation of a Galactic North-South asymmetry in the spatial distribution of main-sequence stars in the local solar neighborhood, determined using stars from the Eighth Data Release of the Sloan Digital Sky Survey. The asymmetry has the appearance of a wave-like perturbation intrinsic to the disk. I offer evidence in support of the interpretation of the asymmetry as a departure from gravitational equilibrium in the local solar neighborhood and speculate as to its possible origins. I outline how future observations can refine the tomography of local perturbations and consider the implications of such studies for dark-matter direct detection experiments.