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Metaplectic geometrical optics for reduced modeling of plasma waves near caustics NICOLAS LOPEZ, Princeton University, ILYA DODIN, Princeton University, PPPL — Geometrical optics (GO) is often used to model wave propagation in weakly inhomogeneous media. However, GO predicts spurious singularities of the wave field near reflection points and, more generally, caustics. This is problematic for applications such as using GO codes to optimize plasma heating and current drive by radiofrequency waves. We present a new formulation of GO, called metaplectic geometrical optics (MGO), that is free from wave field singularities at caustics and thus can be used to develop more versatile codes. We then present examples of how MGO can be used to accurately describe electromagnetic plasma waves propagating in various density profiles.

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