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Thermal convection and gyrokinetic effects in inductively-coupled plasma-based lenses[1] MILAD MORTAZAVI, JAVIER URZAY, ALI MANI, Center for Turbulence Research, Stanford — The principle of operation of a plasma lens consists of tuning the electron-density field, or equivalently, the refractive-index distribution in an ionized gas environment. The use of larger and more powerful lenses with higher electron-density results in higher optical performance and resolution, but also leads to hydrodynamic instabilities and noticeable bulk motion in the plasma, which may be detrimental for its optical performance. In this investigation, the effects of thermal convection and mean gyrokinetic motion are analyzed on an inductively-coupled Argon-plasma lens. The analyses utilize theoretical and computational methods to identify relevant characteristic parameters and operating regimes of interest for the optimal use of the plasma lens.

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