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Vlasov-Fokker-Planck modeling of plasma near hohlraum walls heated with nanosecond laser pulses calculated using the ray tracing equations ARCHIS JOGLEKAR, ALEC THOMAS, University of Michigan — Here, we present 2D numerical modeling of near critical density plasma using a fully implicit Vlasov-Fokker-Planck code, IMPACTA, which includes self-consistent magnetic fields as well as anisotropic electron pressure terms in the expansion of the distribution function, as well as an implementation of the Boris CYLRAD algorithm through a ray tracing add-on package. This allows to model inverse brehmsstrahlung heating as a laser travels through a plasma by solving the ray tracing equations. Generated magnetic fields (eg. the Biermann battery effect) as well as field advection through heat fluxes from the laser heating is shown. Additionally, perturbations in the plasma density profile arise as a result of the high pressures and flows in the plasma. These perturbations in the plasma density affect the path of the laser traveling through the plasma and modify the heating profile accordingly. The interplay between these effects is discussed in this study.

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