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PIC Simulations of Multipole Plasma Trap Diagnostics and Loading Methods[1] HENRIQUE MILLER, MAX ZAKI, ISAAC HAMLIN, NATHANIEL HICKS, University of Alaska Anchorage — The multipole plasma trap program at the UAA Plasma Lab investigates confining quasineutral plasma using RF multipole fields. The ability to load the trap with the desired distribution of particles is an important area of study, and methods for doing so are investigated here via 2D and 3D PIC simulation. These can include electron beam ionization of neutral gas puffed into the trap, thermionic emission of electrons or ions from filaments near the trap boundary, or channeling of plasma into the trap using a 2D linear RF multipole. Diagnosing the trapped plasma is also a key part of the program, and further PIC simulations of insertion of mechanical probes during trap operation will be presented, as will means of collecting particles at the trap boundary at the termination of trapping.

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