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Radio-frequency sheaths in grazing angle magnetic fields[1] MILES TURNER, AOIFE SOMERS, HUW LEGGATE, Dublin City University — Radio-frequency sheaths are a well-known phenomenon in low-temperature plasmas, but they also occur in magnetically confined plasmas designed for fusion applications, particularly when electromagnetic heating techniques are employed. The behaviour of the sheaths in this context is of interest both because of the effect on erosion of plasma facing surfaces by sputtering and possible effects on the stability of the plasma near the wall, with possible consequences for the efficiency of plasma heating. With these problems in mind, in this paper we use a particle-in-cell simulation to investigate the behaviour of a model radio-frequency discharge with a magnetic field at grazing incidence, that is, not quite parallel to, the electrode surface. The plasma parameters are chosen so that, in a normalized sense, they are comparable with those encountered in fusion devices. We discuss the behaviour of the plasma under these conditions, with reference to the adequacy of conventional radio-frequency sheath models under these conditions.

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