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Particle-In-Cell Simulation of Planar Cylindrical Magnetron Sputtering[1] NATHAN CROSSETTE, T. G. JENKINS, D. N. SMITHE, J. R. CARY, Tech-X Corp — Magnetron sputtering is used in a variety of manufacturing processes for producing thin film coatings. Using VSim, a highly parallelized particle-in-cell/finite difference time-domain modeling code, we model the plasma environment and sputtering rate within a 2D axisymmetric cylindrical sputtering device. A static magnetic field from two annular magnets is used to confine particles, and Monte Carlo techniques simulate particle-background gas collisions. An external circuit model modulates the voltage on the target/cathode. We test the effects of varying the magnetic field strength, adjusting the configuration of the external circuit, and locations of the annular magnets on the plasma environment and erosion profiles.

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