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Computational Modeling of Nb Magnetron Sputtering in an SRF Chamber using PIC-MCC[1] THOMAS JENKINS, JAMES MCGUGAN, SCOTT BARTLETT, SCOTT KRUGER, CHRISTINE ROARK, Tech-X Corporation, JONATHAN SMITH, Tech-X UK Ltd., DAVID SMITHE, PETER STOLTZ, Tech-X Corporation, YI XIE, Fermilab — A 2D axisymmetric simulation model for a cylindrical, coaxial magnetron sputtering device is presented. The model was built to simulate niobium sputtering in superconducting radio frequency cavities, in tandem with an experiment being conducted at Fermi National Accelerator Laboratory. The simulation model uses Particle-in-Cell and Finite-Difference algorithms, and is performed using the VSim software [C. Nieter and J. R. Cary, J. Comp. Phys. **196**, 448 (2004)]. The simulation is fully self-consistent and includes an external feedback circuit, secondary electron emission, sputtering emission, and background neutral gas collisions. The magnetic field is solved within the simulation. The erosion profile, deposition profile, and detailed plasma parameters are obtained.

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