Simulation of Velocity Filters in the Daresbury Recoil Separator at the HRIBF[1] J.P. ROGERS, R.L. KOZUB, Tenn. Tech. U., S.D. PAIN, M.S. SMITH, D.W. BARDAYAN, Y. LIU, ORNL, M. MATOS, LSU — The Daresbury Recoil Separator (DRS) at Oak Ridge National Lab's (ORNL) Holifield Radioactive Ion Beam Facility (HRIBF) is used for the study of nuclear reactions of astrophysical importance. For example, the DRS enables direct measurements of proton capture reactions on radioactive ions which occur in stellar explosions such as novae and X-ray bursts. The DRS uses velocity filters (Wien filters) that are tuned to transmit the reaction products with a specific velocity while deflecting the unreacted primary beam particles away from the optical axis, where they are stopped on adjustable slits. Data from earlier calculations of the electromagnetic fields inside and around the filters has been implemented into a FORTRAN program to provide accurate calculations and graphic representations of particle trajectories through the Wien filters. This information can be used to predetermine optimum positions of the slits for future experiments. The program will be used as an experimental setup tool for the DRS.

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