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Simulation of Alpha-Channeling in Mirror Machines ANDREY ZHMOGINOV, NATHANIEL FISCH, Princeton Plasma Physics Laboratory — If suitable diffusion paths are defined in the coupled velocity-configuration space, an alpha-channeling effect can be obtained by shining waves resonating with alpha particles in mirror machines. To find the most efficient way to extract energy from alpha particles, different regimes of the wave-particle interactions and different parameters of the system are explored computationally. Computational models of different degrees of accuracy and complexity are used, the most rigorous of which is the computational solution of a full set of dynamic equations. The results obtained through different models are compared, and the applicability of standard approximations is determined. In light of these computations, the feasibility of implementing this concept is discussed.

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