

Abstract Submitted
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Development of a database approach for analyzing a large dataset of simulated particle trajectories¹ FARIHA TAMBOLI, DAVID SCHAFFNER, Bryn Mawr College, ADAM LIGHT, Swarthmore College — A database method is developed for analyzing a very large dataset of simulated particle trajectories within a long aspect-ratio magnetic field structure called a Taylor state. Six hundred thousand protons are launched from a random distribution of velocities, directions, and positions within a static magnetic field computed from the differential equation $\text{curl } \mathbf{B} = \lambda \mathbf{B}$ in a long-aspect ratio cylindrical boundary using the eigensolver code PSI-Tet. The behavior and transport of these particle can be studied by seeking patterns among initial conditions and their ultimate trajectories. The relational organization of the dataset allows access to a lot of information through an inexpensive query search, specifically using a SQL database.

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