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Calculation of Particle Bounce and Transit Times on General Geometry Flux Surfaces DOUGLAS SWANSON, Yale University, JONATHAN MENARD, Princeton Plasma Physics Laboratory — Stabilizing the resistive wall mode (RWM) is important to maximize the plasma pressure in tokamaks and spherical tori. Rotational stabilization of the RWM is predicted from kinetic damping theory to depend strongly on particle bounce and transit times. [1] Previous calculations of bounce and transit times have assumed high aspect ratio and circular flux surfaces, approximations unsuitable for the National Spherical Torus Experiment (NSTX). Analytic solutions for the bounce and transit times were derived as functions of particle energy and magnetic moment for low aspect ratio and elliptical flux surfaces. The solutions were found to scale as the elongation at low aspect ratio, and as the square root of the elongation at high aspect ratio. For typical values of the parameters the bounce and transit times were found to differ from the high aspect ratio, circular results by as much as 250-300%. Numeric solutions were also computed using Mathematica and IDL and are being compared with the analytic forms. Preliminary results show good agreement between the analytic and numeric solutions. Full analytic and numeric solutions will ultimately be compared against experimental data from DIII-D and NSTX. Work supported by the U.S. Department of Energy. [1] A. Bondeson and M.S. Chu, Phys. Plasmas **3**, 8 (1996)

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