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Onset and saturation of ion heating by odd-parity rotating magnetic fields in the FRC SAMUEL COHEN, Princeton Plasma Physics Laboratory, ALEXANDRA S. LANDSMAN, Naval Research Laboratory — Heating of figure-8 ions by odd-parity rotating magnetic fields (RMF) applied to an elongated field-reversed configuration is explored using numerical and analytic techniques. Energy gain is shown to occur at resonances of the RMF frequency with the figure-8 orbital frequency. Cyclotron orbits and high-energy figure-8 orbits tend to interact regularly with the RMF, leading to little or no heating. There is a range of energies for figure-8 orbits, which have a stochastic interaction with the RMF, showing large gains of energy. The lower bound on this type of heating can be derived using exponential separation of trajectories. It is shown that this bound depends on the frequency ratio, s , where s is the ratio of the RMF frequency to the figure-8 orbital frequency.

Samuel Cohen
Princeton Plasma Physics Laboratory

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