

Abstract Submitted
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Chaotic magnetic fields and their effect on particle motion¹ B. DASGUPTA, IGPP, UC-Riverside, A.K. RAM, PSFC, MIT — A simple configuration consisting of a circular current loop and a current carrying straight wire can generate three-dimensional chaotic magnetic fields. The parameters controlling the onset of chaotic fields are the ratio of the current in the loop to that in the wire, and the relative positions of the two current systems. This configuration can be described by a Hamiltonian which can then be used to study the onset of chaotic fields. We will present analytical and numerical studies on the generation of chaotic magnetic fields and the nature of these fields. A description of the motion of charged particles in such chaotic magnetic fields will also be presented. Possible application to energetic charged particle transport in space plasmas will be discussed.

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