Abstract Submitted
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**Dust Devil Dynamics** L. COUEDEL, A. ESCARGUEL, AMU/CNRS, W. HORTON, Institute for Fusion Studies, University of Texas at Austin, USA, S. BENKADDA, C. ARNAS, AMU/CNRS, PIIM, AIX-MARSEILLE UNIVERSITY COLLABORATION, INSTITUTE FOR FUSION STUDIES TEAM — A self-consistent hydrodynamic model for the onset of a dust devil vortex is derived and analyzed. The toroidal flows and vertical velocity fields are driven by an instability that arises from the inversion of the mass density stratification from solar heating of the sandy surface soil. The nonlinear dynamics in the vertical/horizontal flows drives the toroidal flow through a parametric decay process. Methods developed for triboelectric charging of dust are used to estimate the charging of the sand particles. Elementary comparisons are made with the data from in dust devil observations and research. The parameters for a proposed Dust Devil laboratory experiment are given..

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