

Abstract Submitted  
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**Long-time Confinement of Toroidal Electron plasma in SMARTEX-C** LAVKESH LACHHVANI, Institute for Plasma Research, SAMBARAN PAHARI, Bhabha Atomic Research Center, RAJIV GOSWAMI, PRABAL KUMAR CHATTOPADHYAY, Institute for Plasma Research — Upgradation of vacuum, steady state magnetic field followed by mitigation of instabilities have led to unprecedented confinement of toroidal electron plasmas with purely toroidal B field in a small aspect ratio partial toroidal trap (SMARTEX-C). The confinement time which extends into 10's of second betters the previous record with similar B field topologies by at least an order of magnitude and may improve further with B field and pressure. It may be noted that in such traps existing transport theory mainly due to magnetic pumping phenomena is supposed to have limited the confinement to much lower times. The experiments therefore appear to challenge the limits of confinement proposed theoretically. Detail scaling of confinement time, accompanying analysis and comparison with theoretical predictions along with possible reasons for discrepancies with theory will be discussed in this paper.

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