

Abstract Submitted  
for the DPP06 Meeting of  
The American Physical Society

**Thermal and Fast Ions transport in RFP Quasi Single Helicity regimes** MARCO GOBBIN, LIONELLO MARRELLI, PIERO MARTIN, Consorzio RFX - Associazione Euratom-ENEA - Padova, Italy, ROSCOE B. WHITE, Princeton Plasma Physics Laboratory, Princeton, NJ, USA — The hamiltonian code ORBIT has been used to investigate the effect of helical structures on particles transport in Reversed Field Pinch plasmas. Thermal particles averaged diffusion coefficients computed in Single Helicity (SH) states are of the order of  $0.5 \text{ m}^2/\text{s}$ , quite lower than the experimental values in standard chaotic plasmas (about 20-30  $\text{m}^2/\text{s}$ ). The motion of fast ions in high-performance RFP plasmas has been studied too: the presence of helical surfaces in the fast ions orbits space due to new resonances between the orbital motion of the fast ions and the structure of the field is found to dramatically improve the confinement of fast ions (much longer than for thermal ions), consistent with experimental observations in MST (G.Fiksel et al, Phys.Rev.Lett **95**,125001 (2005) ).

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Date submitted: 19 Jul 2006

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