

Abstract Submitted  
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**The dynamics of coherent scrape-off layer structures in a snowflake divertor** D.D. RYUTOV, R.H. COHEN, I. JOSEPH, T.D. ROGNLIEN, M.V. UMANSKY, Lawrence Livermore National Laboratory, Livermore, CA 94551 — A characteristic feature of a snowflake divertor is the quadratic dependence of the poloidal magnetic field strength vs the distance from the field null. Compared to a standard X-point divertor, where the magnetic field dependence over distance is linear, this leads to significant changes in the geometry of flux tubes passing in the vicinity of the null. In particular, squeezing of flux tubes by the magnetic shear becomes stronger; the field line mapping from the midplane to the divertor plate indicates much higher poloidal velocities of plasma filaments near the divertor plates. Thus, significant changes are expected in the dynamics of coherent structures (sometimes called “blobs”) in the scrape-off layer. An analysis of the dynamical effects associated with curvature drive, divertor boundary conditions, and strong magnetic shearing is presented. Regimes of enhanced blob transport are identified. Prepared by LLNL under Contract DE-AC52-07NA27344.

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