

Abstract Submitted  
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**Effects of shear on the magnetic footprint and stochastic layer**

**in double-null divertor tokamak** HAMIDULLAH FARHAT, ALKESH PUNJABI, HALIMA ALI, Center for Fusion Research & Training, Hampton University, Hampton, VA 23668 — We have developed a new area-preserving map, called the Adjustable Shear Map, to calculate effects of shear on the magnetic footprint and stochastic layer in double-null divertor tokamak. The map is given by equations  $x_{n+1} = x_n - ky_n[(1 - y_n^2)(1 + sy_n) + sx_{n+1}^2]$ ,  $y_{n+1} = y_n + kx_{n+1}[1 + s(x_{n+1}^2 + y_n^2)]$ .  $k$  is the map parameter and  $s$  is the shear parameter. O-point of the map is  $(0, 0)$ , and the X-points are  $(0, 1)$ , and  $(0, -1)$ . For  $s=0$ ,  $k=0.6$ , the last good surface is  $y=0.9918$  with  $q \sim 3$ . Here we will report on the effects of shear on the stochastic layer and magnetic footprint as the shear parameter is varied from 0 to -1. Here we will report the preliminary results on the effect of shear on the magnetic footprint and the stochastic layer where the shear parameter  $s$  has values between -1 and 0. using method of maps [1-4]. This work is done under the DOE grant number DE-FG02-01ER54624. 1. A. Punjabi, A. Boozer, and A. Verma, *Phys. Rev. Lett.*, **69**, 3322 (1992). 2. H. Ali, A. Punjabi, and A. Boozer, *Phys. Plasmas* **11**, 4527 (2004). 3. A. Punjabi, H. Ali, and A. Boozer, *Phys. Plasmas* **10**, 3992 (2003). 4. A. Punjabi, H. Ali, and A. Boozer, *Phys. Plasmas* **4**, 337 (1997).

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