



TRIANGULARITY EFFECTS ON THE COLLISIONAL DIFFUSION FOR ELLIPTIC TOKAMAK PLASMA

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ABSTRACT

In this conference the effect of ellipticity and triangularity will be analyzed for axisymmetric tokamak in the collisional regime. Analytic forms for the magnetic field cross sections are taken from those derived recently by other authors [1,2]. Analytical results can be obtained in elliptic plasmas with triangularity by using an special system of tokamak coordinates recently published [3-5]. Our results show that triangularities smaller than 0.6, increases confinement for ellipticities in the range 1.2 to 2. This behavior happens for negative and positive triangularities; however this effect is stronger for positive than for negative triangularities. The maximum diffusion velocity is not obtained for zero triangularity, but for small negative triangularities. Ellipticity is also very important in confinement, but the effect of triangularity seems to be more important. High electric inductive field increases confinement, though this field is difficult to modify once the tokamak has been built. The analytic form of the current produced by this field is like that of a weak Ware pinch with an additional factor, which weakens the effect by an order of magnitude. The dependence of the triangularity effect with the Shafranov shift is also analyzed.

References

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