World Academy of Science, Engineering and Technology
International Journal of Health and Medical Engineering
Vol:9, No:08, 2015

MHD Equilibrium Study in Alborz Tokamak

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Abstract : Plasma equilibrium geometry has a great influence on the confinement and magnetohydrodynamic stability in tokamaks. The poloidal field (PF) system of a tokamak should be able to support this plasma equilibrium geometry. In this work the prepared numerical code based on radial basis functions are presented and used to solve the Grad–Shafranov (GS) equation for the axisymmetric equilibrium of tokamak plasma. The radial basis functions (RBFs) which is a kind of numerical meshfree method (MFM) for solving partial differential equations (PDEs) has appeared in the last decade and is developing significantly in the last few years. This technique is applied in this study to obtain the equilibrium configuration for Alborz Tokamak. The behavior of numerical solution convergences show the validation of this calculations.

Keywords : equilibrium, grad–shafranov, radial basis functions, Alborz Tokamak
Conference Title : ICFPP 2015 : International Conference on Family Physicians and Practice
Conference Location : Barcelona, Spain
Conference Dates : August 17-18, 2015