

Abstract Submitted
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Status and Benchmarking of the Free Boundary Equilibrium Code FREEBIE¹ JAKUB URBAN, Association EURATOM/IPP.CR, IPP AS CR, Prague, Czech Republic, JEAN-FRANCOIS ARTAUD, VINCENT BASIUK, CEA, IRFM, F-13108 Saint Paul Lez Durance, France, KARIM BESSEGHIR, Association EURATOM/Confédération Suisse, EPFL, CRPP, Lausanne, Switzerland, PHILIPPE HUYNH, CEA, IRFM, F-13108 Saint Paul Lez Durance, France, SUNHEE KIM, ITER Organization, Route de Vinon sur Verdon, 13115 St Paul lez Durance, France, JONATHAN BRYAN LISTER, Association EURATOM/Confédération Suisse, EPFL, CRPP, Lausanne, Switzerland, ERIC NARDON, CEA, IRFM, F-13108 Saint Paul Lez Durance, France — FREEBIE is a recent free boundary equilibrium (FBE) code, which solves the temporal evolution of tokamak equilibrium, described by the Grad-Shafranov equation and circuit equations for active and passive poloidal field components. FREEBIE can be run stand-alone, within the transport code CRONOS or on the ITM (European Integrated Tokamak Modelling) platform. FREEBIE with prescribed plasma profiles has already been successfully benchmarked against DINA simulations and TCV experiments. Here we report on the current status of the code coupling with transport solvers and benchmarking of fully consistent transport-FBE simulations. A benchmarking procedure is developed and applied to several ITER cases using FREEBIE, DINA and CEDRES++. The benchmarks indicate that because of the different methods and the complexity of the problem, results obtained from the different codes are comparable only to a certain extent.

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