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Analytically and numerically computed tokamak equilibria at unity beta¹ RUSSELL NECHES, STEVEN COWLEY, PIERRE-ALEXANDRE GOURDAIN, JEAN-NOEL LEBOEUF, UCLA — The characteristics of near unity- β equilibria are investigated with two codes. CUBE is a multigrid Grad-Shafranov solver, and ACUBE was written to compute solutions using analytic unity- β equilibria [S.C. Cowley *et. al.*, 1991]. Results from each method are quantitatively compared in several distinct equilibrium conditions. These comparisons corroborate the theoretical results and provide benchmarks for high-resolution numerical results available from CUBE. These tools facilitate exploration of many properties of high- β equilibria, such as a highly diamagnetic plasma and its ramifications for stability and transport as β approaches unity.

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