

Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Toroidal Energy Principle (TEP) and perturbed equilibrium code STB¹ LEONID ZAKHAROV, LiWFusion, DI HU, School of Physics, Peking University, Beijing 100871, China — The MHD energy principle TEP is presented in terms of perturbations of the vector potential, rather than plasma displacement. This form makes TEP capable to describe both the ideal plasmas stability and the perturbed equilibria. The functional is expressed in two terms. The first one represents the energy of magnetic field and is calculated using working equilibrium coordinate system. The second term, containing plasma displacement is expressed in the compact form using Hamada coordinates. This representation uses the same combinations of metric coefficients as in the equilibrium calculations. The STB code implements the TEP for both ideal MHD and perturbed equilibria. In the first case, it uses the matching conditions of the ideal MHD. In the second case, the 2-D equilibrium islands are introduced in order to resolve the singularity and match the solutions across the resonant surfaces

¹Partially by (a) US DoE contract no. DE-AC02-09-CH11466, (b) General Fusion Inc.

Leonid Zakharov
LiWFusion, PO Box 2391, Princeton NJ 08543

Date submitted: 15 Jul 2016

Electronic form version 1.4