**Control of asymmetric magnetic perturbation in tokamaks by
computation of ideal perturbed equilibria**[1] JONG-KYU PARK, JONATHAN
MENARD, Princeton Plasma Physics Laboratory, ALLEN BOOZER, Columbia
University, MICHAEL SCHAFFER, General Atomics — It is well known that toka-
mak plasmas are highly sensitive to a small breaking of axisymmetry by external
magnetic perturbations. The newly developed Ideal Perturbed Equilibrium Code
(IPEC) computes an ideally perturbed equilibrium by the perturbations, thereby
yielding the three-dimensional features of the perturbed plasma in high resolution.
The application of the code to observations of locked modes in NSTX and DIII-D
resolved paradoxical results and revealed the most sensitive mode of external pertur-
bations, whose reduction is most important for the control of field error problems in
tokamaks. IPEC has numerous applications, such as error field mitigation in ITER
or the plasma response to ELM control coils. IPEC can be extended to compute
the perturbed equilibria in the presence of plasma viscous forces due to the toroidal
asymmetries in the magnetic field strength and can be compared with measured
plasma responses in NSTX.

Jong-kyu Park
Princeton Plasma Physics Laboratory

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