Abstract:

This paper is an extension of the brief study by Sarah Douglas *et al.* [*Phys. Plasmas* **20** (2013) 114504] where in the study a sinusoidal perturbation of the heating power has been studied. In this paper a stepwise increase of the heating power and its influence on the LL–HH transition are studied. Using a function, Atanh(t/T)Atanh(t/T) for the transition of input heating power for tokamak plasmas, i.e. the addition of the perturbation, Atanh(t/T)Atanh(t/T), to constant power q0q0 is shown to promote the confinement, leading to the LL–HH transition at a lower value of q0q0, as compared to the case of constant q0q0 without the Atanh(t/T)Atanh(t/T) perturbation. It is seen that the input heating power QQ that consists of constant part q0q0 in addition to a function Atanh(t/T)Atanh(t/T) provides the LL–HH transition for relatively small AA and much wider range values of 1/T1/T as compared to Sarah Douglas *et al.* [*Phys. Plasmas* **20** (2013) 114504].