The losses of runaway electrons induced by RMP in the J-TEXT tokamak *

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Abstract.
The effect of resonant magnetic perturbations (RMP) on the transport of runaway electrons has been studied in the J-TEXT tokamak. The runaway electrons are utilized as test particles for revealing the effects of the RMP coils to the magnetic field topologies. Enhanced loss of the runaway electrons due to the magnetic perturbation has been observed. According to the synchrotron radiation originated from the runaway beam inside the plasma and the hard x-ray radiations from the lost runaway electrons as shown in figure 1, the effect of magnetic perturbation on the runaway transport has be derived.

Fig. 1 A typical runaway discharge with RMP coils powered at 0.26s. The application of RMP resulted an enhancement of local runaway loss rate as indicated by the HXR flux. The RMP has negligible effect on the highly energetic runaway electrons confined inside the core region.