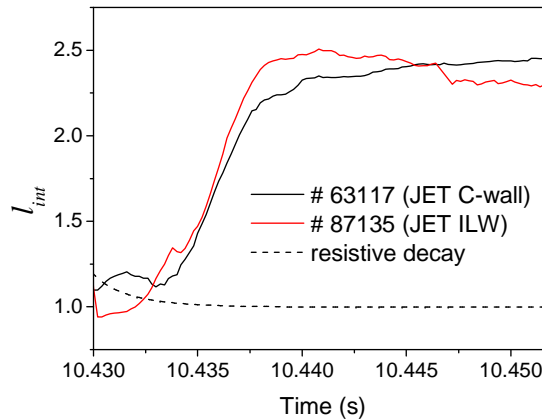
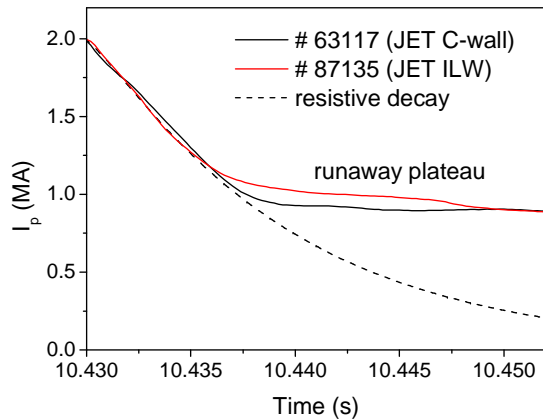




## Current profile shape effects on the formation and termination of runaway beams in tokamak disruptions and implications for ITER

- Substantial peaking of the current profile during the generation of the RE current is predicted by 1-D modeling of the plasma and RE current density profiles during the disruption CQ and supported by JET observations



$I_{int}$  estimated by means of plasma equilibrium reconstruction with EFIT

The observed peaking suggests potentially RE MHD unstable plasmas

- 1-D simulations for ITER disruptions with Ar and Ne injection (including different RE seeds and the avalanche mechanism) indicate that:
  - for the longest CQs compatible with acceptable mechanical forces in ITER, RE beams up to  $\sim 10$  MA can be generated and a few several hundreds of MJ might be deposited by the REs on PFCs
  - the RE beam typically crosses the high- $I_{int}$  empirical stability boundary in  $I_{int}$ - $q_a$  space before the expected time in ITER for the vertical instability growth ( $\sim 100$  ms)
  - mixed Ar+D or Ne+D injection is effective in controlling the formation of the RE current as well as the energy deposited by the REs on PFCs

