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Interaction between Resistive Interchange Mode and Helically Trapped Energetic Ions and its Effects on the Energetic Ions and Bulk Plasmas in LHD

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Bursting resistive interchange modes destabilized by a characteristic motion of helically trapped energetic ions are for the first time observed in a helical plasma and induce large negative radial electric field near the edge, which indicates non-ambipolar losses of the fast ions by the modes. The burst modes also induce a clear change of toroidal plasma rotation and micro-turbulence suppression accompanying transient confinement improvement.

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