

Abstract Submitted
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MARFE structure and dynamics in NSTX¹ RICARDO MAQUEDA, Nova Photonics, RAJESH MAINGI, CHARLES BUSH, ORNL, KEVIN TRITZ, Johns Hopkins University, K.C. LEE, UC-Davis, NSTX TEAM — Traditionally, MARFEs (Multifaceted Asymmetric Radiation From the Edge) are seen in tokamaks as poloidally localized, toroidally symmetric bands of low temperature, high density, highly radiating plasmas surrounding the center column. In NSTX a new aspect of MARFEs has been observed using a fast framing camera at up to 120,000 frames/s during high density, double null, H-mode discharges. As a result of ELM activity, a toroidally localized (i.e. not symmetric) MARFE precursor is created from partial burn-through of a pre-existing MARFE. A hot component of this MARFE precursor is also observed in ultra-soft X-rays. This precursor then moves upwards and away from the divertor following the local magnetic field line at speeds of ~ 15 km/s. A conventional MARFE then re-forms from this precursor seed as its vertical motion slows down (and eventually stops) at and above the device mid-plane. The re-formed traditional MARFE then moves down towards its equilibrium position in the lower divertor where it interacts with the next ELM in the cycle. The dynamics of the ELM/MARFE cycle as well as the MARFE characteristics in NSTX will be presented.

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