

Abstract Submitted  
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**Experimental validation of non-uniformity effect of the radial electric field on the edge transport barrier formation in JT-60U H-mode plasmas**<sup>1</sup> KENSAKU KAMIYA, National Institutes for Quantum and Radiological Science and Technology (QST), KIMITAKA ITOH, National Institute for Fusion Science (NIFS), SANAE-I ITOH, Research Institute for Applied Mechanics, Kyushu University, JT-60 TEAM — Non-uniformity effects of the edge radial electric field ( $E_r$ ) on the edge transport barriers (ETBs) formation have been identified with high-spatiotemporal resolution spectroscopic measurement. We found the decisive importance of  $E_r$ -curvature (2nd derivative of  $E_r$ ) on ETB formation during ELM-free H-mode phase, but there is only a low correlation with the  $E_r$ -shear (1st derivative of  $E_r$ ) value at the peak of normalized ion temperature gradient in the pedestal region. Observation of a uniform toroidal MHD oscillation (i.e. Geodesic Acoustic Mode having toroidal mode number  $n = 0$ ) during the ETBs formation can also support the hypothesis of turbulence suppression in association with Zonal-flow (and/or  $E_r$ -curvature). Furthermore, in the ELMing phase, the effect of curvature is also quantified in terms of the relationship between pedestal width and thickness of the layer of inhomogeneous  $E_r$ . This is the fundamental basis to understand the structure of transport barriers in fusion plasmas.

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