

Abstract Submitted  
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**Observation of nonlinear phenomena of edge fluctuations in the TST-2 spherical tokamak**<sup>1</sup> YOSHIHIKO NAGASHIMA, RIAM, Kyushu University, YUICHI TAKASE, AKIRA EJIRI, MASATERU SONEHARA, TAKUYA OOSAKO, The University of Tokyo, TST-2 TEAM — Turbulence transport is one of the most important research themes in nature, fusion, and laboratory plasmas. TST-2 is a medium size spherical tokamak device where we have good turnaround of experiments and flexible accessibility of Langmuir probes. In this study, we present progress in edge fluctuation measurement with a number of Langmuir probes in TST-2. In previous work, a number of edge fluctuations have been observed in ohmically heated plasmas. Representative edge fluctuations are an MHD oscillation in the frequency of 10 kHz and turbulence fluctuations in the frequency range of 60-100 kHz. Spatial structures of the fluctuations have been investigated, and we found significant nonlinear couplings among the fluctuations under a few observation conditions. Nonlinear energy transfer between MHD modes and turbulence is an important topic in fusion plasma study. However, we need careful consideration whether the nonlinear coupling implies the nonlinear energy transfer among the fluctuations. Experimental investigation of conditions under which the nonlinear couplings occurs is on-going. Further investigation of various nonlinear phenomena will be addressed.

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