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## 8.56 Microwave frequency comb Doppler reflectometer applying fast digital data acquisition system in LHD

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As for studying the behavior of the turbulence affecting transport, the multi-scale turbulence interaction is receiving much attention at present. For this aim, higher spatial and temporal resolution diagnostics have been developed and applied in several devices [1]. In LHD, such the precise spatio-temporal behavior of turbulence flow velocity and intensity has been measured by the multi-channel microwave frequency comb Doppler reflectometer system [2, 3]. Recently, we succeeded in increasing the radial observation points of this Doppler reflectometer system up from 8 to 20 (or especially up to 60). The high sampling rate of 40 GS/s is utilized for the digital signal processing. The detail of the system and some topical results will be presented and the application technique will be discussed.

- [1] T. Tokuzawa, Nuclear Fusion 57 (2017) 025001.
- [2] T. Tokuzawa et al., Plasma Fusion Res. 9 (2014) 1402149.
- [3] T. Tokuzawa et al., Phys. of Plasmas 21 (2014) 055904.

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