

### **Multi-scale turbulence measurement by integrated backscattering, forward scattering and cross-polarization scattering of Doppler reflectometer**

On EAST, by arrange the receiving antenna at different poloidal locations, we can detect both the back-scattering ( $m=-1$ ) signal and before-scattering ( $m\geq 1$ ) signal, which may help us to measure the different scale turbulence at the same location, simultaneously. Moreover, by integrated the cross-polarization scattering (CPS) with this Doppler reflectometer, we can also measure magnetic fluctuations at the same time. This integrated system includes ten back-scattering channels, one before-scattering channel (will improve to five channels) and four CPS channels, which can provide the simultaneous measurements of the multi-scale turbulence at different radial locations.