Turbulence measurements with fast two-color interferometry on Alcator C-Mod

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ABSTRACT
The two-color interferometry diagnostic on Alcator C-Mod has been upgraded to simultaneously measure line-integrated electron density and directly gradient fluctuations for tokamak and transport studies. Signal quality and spatial resolution are improved by using a heterodyne technique and a light-trapping configuration of the two-color interferometer electronics and signal processing. The diagnostic is also upgraded to measure line-integrated density fluctuations. The two-color interferometer diagnostic on Alcator C-Mod has been upgraded to measure line-integrated density fluctuations.

CORE FLUCTUATIONS MEASURED ARE DOPPLER-SHIFTED
The effective detector size traversing the plasma sets the maximum detectable wave number. The QCM is a robust, well-characterized feature of Enhanced D turbulence measurements.

CONCLUSIONS AND FUTURE WORK
The two-color interferometry diagnostic on Alcator C-Mod has been upgraded to simultaneously measure line-integrated electron density and directly gradient fluctuations for tokamak and transport studies. Signal quality and spatial resolution are improved by using a heterodyne technique and a light-trapping configuration of the two-color interferometer electronics and signal processing. The diagnostic is also upgraded to measure line-integrated density fluctuations. The two-color interferometer diagnostic on Alcator C-Mod has been upgraded to measure line-integrated density fluctuations.