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8.30 First time-resolved electron density measurements in the C-2W Advanced Field Reversed Configuration plasmas from long-path compact second-harmonic interferometer

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Characterization of plasma structure and density is critical for diagnosis and control of C-2W plasma equilibria. To this end, two compact, highly portable, turnkey second harmonic interferometers[1] are used to make measurements with greater flexibility than available from other diagnostics, providing important information sooner than what would be possible from more complicated systems and in areas otherwise inaccessible. The systems are based on a fiber-coupled 1064nm Nd:YAG laser, and provide a sensitivity of a few 10^{19} m⁻² with a time resolution of a few microseconds. System upgrades were made to allow for beam paths in excess of five meters. Data from two system configurations will be presented, showing plasma translation and merged equilibria.

[1] F. Brandi, et al., Rev. Sci. Instrum., 80, 113501 (2009)

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