

Abstract Submitted  
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**Broadband shearing interferometer for divergence characterization** AMANDA MEIER, CHARLES DURFEE, Colorado School of Mines, Golden, CO — Collimation testing for ultrafast pulses is important for grating compressor alignment, astigmatism correction and for the new technique of simultaneous spatial and temporal focusing (SSTF). Traditional techniques for checking collimation include knife-edge and camera scans, as well as shearing plate interferometry. The latter approach does not work well for broadband pulses because intrinsic relative time delays are larger than the coherence time. We have developed a novel polarized Sagnac shearing interferometer which combines spatial and spectral interference. We use birefringence to introduce a relative time delay to give reference spectral fringes. Divergence and spatial shear results in a local angle between the beams. The combination gives fringes in the spatial-spectral domain that rotate with divergence. We will present our experimental setup and fringe analysis techniques, along with estimates of the sensitivity of our measurement. In addition to collimation and astigmatism testing, we propose an extension to characterize angular spatial chirp.

Amanda Meier  
Colorado School of Mines, Golden, CO

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