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**In situ characterization of SSTF beams yielding phase and M2** MICHAEL GRECO, AMANDA MEIER, ERICA BLOCK, JEFF SQUIRE, CHARLES DURFEE, Colorado Sch of Mines — Simultaneously spatial and temporal focusing (SSTF) of large bandwidth, femtosecond pulses has been demonstrated as a useful way to deliver high energy, ultrafast pulses to a focal plane without incurring second order effects that would damage material or distort the beam as it propagates. Though the optical components used to create these beams are common, the alignment of them (gratings and focusing optics in particular) is difficult. By combining information from a knife edge scan and a dispersion scan we can correct for misalignment in a grating compressor. Similar techniques for determining phase information of a conventionally focused ultrafast laser pulse involve spatial light modulators (SLM) to impart spectral phase[1]. An SSTF beam will experience a change in second order phase away from the focal plane along the axis of propagation. This may be used in lieu of an SLM for the purpose of observing higher order phase with a dispersion scan.

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