Integrated Single Grating Compressor for Variable Pulse Front Tilt in Simultaneously Spatially and Temporally Focused Systems

*Erica Block and Jeffery Squier*

**Summary:** A multipass chirped pulse amplification system for simultaneous spatially and temporal focusing

**Description:** A Ti:Al$_2$O$_3$ multipass chirped pulse amplification system is outfitted with a single grating, simultaneous spatially and temporal focusing compressor platform. This novel design has the ability to easily vary the beam aspect ratio of a spatially and temporal focusing beam, and thus the degree of pulse front tilt at focus, while maintaining a net zero-dispersion system. Accessible variation of pulse front-tilt gives the full spatio-temporal control over the intensity distribution at the focus. Variation of the pulse front tilt provides another degree of freedom for materials modification based on scan direction.

**Main Advantages of this Invention**
- Allows for smooth variation of pulse front tilt
- Easy to apply and has the potential for automation

**Potential Areas of Application**
- Nonreciprocal writing
- Micromachining

**ID number:** 15012

**Intellectual Property Status:** US Pat. Appl. No. 14/968,633

**Opportunity:** We are seeking an exclusive or non-exclusive licensee for marketing, manufacturing, and sale of this technology.

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