Abstract Submitted
for the SES05 Meeting of
The American Physical Society

Modeling of Pulse Compression in Dispersion-flattened Fibers
SHENGBO XU, DAVID REITZE, Department of Physics, University of Florida —
Microstructured photonic crystal fibers (PCFs) have unique and tailorable properties which lead to novel ways of generating and investigating nonlinear optical phenomena. Supercontinuum generation in PCFs provide a novel way to perform pulse compression. Previous results show supercontinuum generation in PCFs is extremely sensitive to input power fluctuations. However, the chromatic dispersion of PCFs can be altered, in particular flattened, using specific fiber geometries to minimize this effect and provide stable and smooth continuum. We develop a full, extended NLSE model to simulate continuum generation in the dispersion-flattened fibers. The continuum generation is suppressed in favor of self-phase modulation and self-steepening, thus producing a cleaner spectral phase. A simulated pulse shaper using SLM is used to perform pulse compression and generating ∼3fs compressed pulses. Therefore, dispersion-flattened may have important application in generating single cycle ultrafast pulses.

Shengbo Xu
Department of Physics, University of Florida

Date submitted: 09 Aug 2005 Electronic form version 1.4