

## Daniel E. Adams, PhD

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**EDUCATION**     *Doctor of Philosophy, Applied Physics*  
Colorado School of Mines, Golden, CO  
Graduated May, 2010  
Concentration: Ultrafast Optics

*Bachelor of Science, Engineering Physics*  
Colorado School of Mines, Golden, CO  
Graduated May, 2005  
Concentration: Applied Physics

**EXPERIENCE**     *Senior Research Scientist*     Summer 2011-present  
Kapteyn-Murnane Laboratories  
1855 South 57th Court, Boulder, CO 80301

- Demonstrated chromium doped YAG free-space laser for amplification in the telecommunications c-band.
- Thermally induced lens modeling and measurement in cryogenically cooled Ti:Sapp amplifiers.
- Immediately upon joining Kapteyn-Murnane Laboratories, wrote and won AFOSR \$750K Grant

*Postdoctoral Researcher*     Fall 2010-present  
Kapteyn-Murnane Group  
JILA/NIST/CU

- Implemented advanced x-ray microscopy techniques toward record 22nm spatial resolution using coherent diffraction imaging with a desktop 13nm high harmonic source
- Developed and implemented advanced algorithms for image processing and object reconstruction for x-ray microscopy

*Research Assistant*     Fall 2005-Fall 2010  
Ultrafast Optics Group, Charles G. Durfee  
Physics Department, Colorado School of Mines

- Developed micron-sized droplet source for hard/soft x-ray production
- Developed spatiotemporal camera to investigate nonlinear propagation in bulk media by spatially and spectral resolved interferometry
- Characterized the nonlinear dynamics of filament formation and propagation
- Simulated spatiotemporal focusing for low N.A. micro-machining
- Designed and implemented 50mK microfluidic temperature probe using spatially and spectral resolved interferometry

**PUBLICATIONS**     *Publications*

**PATENTS**

- Optics letters, **9**, 1294-6, "Characterization of coupled nonlinear spatio-spectral phase following an ultrafast self-focusing interaction. (2009)
- Optics letters, **7**, 1115-7, "Spatiotemporal dynamics of cross-polarized wave generation." (2010)

- Optics express, **17**, 18086-94, “Temporally focused femtosecond laser pulses for low numerical aperture micromachining through optically transparent materials.” (2010)
- Optics express, **24**, 24673-8, “Spatio-temporally focused femtosecond laser pulses for nonreciprocal writing in optically transparent materials.” (2010)
- Optics Express, **23**, 22470-9, “Ultra-high 22 nm resolution coherent diffractive imaging using a desktop 13 nm high harmonic source.” (2011); Invited talk, CLEO (2011).
- Optics Express, **22**, 24778, “A generalization for optimized phase retrieval algorithms.” (2012)
- Optics Express, **17**, 19050, “High numerical aperture reflection mode coherent diffraction microscopy using off-axis apertured illumination.” (2012)
- Optics Express, **6**, 6783, “Imaging by Integrating Stitched Spectrograms” (2013)

*Patents*

- Application number PCT/US2011/0307461, “Spatially chirped pulses for femtosecond laser ablation through transparent materials.”

**TEACHING  
EXPERIENCE**

*Guest Lecturer* Spring 2013  
 Physics Department, Colorado School of Mines  
 • Lectures on Nonlinear Fiber Optics

*Guest Lecturer* Fall 2011  
 Physics Department, University of Colorado, Boulder  
 • Lectures on error propagation in calculation 200+ students

*Teaching Assistant* Spring 2004 - Fall 2004  
 Physics Department, Colorado School of Mines  
 • Assistant: analog electronics laboratory  
 • Assistant: digital electronics laboratory

**COMPUTER  
SKILLS**

*Languages & Software:* MatLab, Mathematica, LabView, C++, Python  
*Operating Systems:* Windows, Mac, Linux.

**REFERENCES**

- Margaret Murnane: Distinguished Professor University of Colorado, Boulder  
 Margaret.Murnane@colorado.edu. 303-492-7839
- Henry Kapteyn: CEO and President of Research KMLabs  
 Henry.Kapteyn@colorado.edu. 303-492-8198
- Chris Wood: Vice President of Research KMLabs  
 cwood@kmlabs.com. 303-544-9068
- Charles Durfee: Assistant Professor Colorado School of Mines  
 cdurfee@mines.edu. 303-273-3894