

Skills

- Strong background in electrical engineering, familiar with laplace/fourier methods, stability calculations, etc. Designed and tested many circuits utilizing analog/digital components, created PCB layouts, and fabricated them.
- Extensive experience with Solidworks, MATLAB, and Cadsoft Eagle, and the MPLAB IDE for PIC microprocessors; familiar with LabView, Zemax, the Autodesk suite, PBASIC, Visual Basic, Arduino, Java, and C programming languages, FPGA design/synthesis/implementation, and the Xinx ISE IDE, etc.
- Obtained the rank of Eagle Scout in the Boy Scouts of America. Learned many skills including leadership, etc. Held a variety of leadership positions and performed many hours of community service.
- Mechanical skills including machining, welding, fabrication, working with composite materials, etc.
- Diverse background in photonics including THz generation, telecommunication systems, and solid state laser design. Constructed several SS lasers using surplus components.
- Extensive experience with optics/lasers, in particular working with ultrafast laser systems and chirped-pulse amplification systems.

Education

- University of California at Santa Barbara
 - B. S. in Electrical Engineering (GPA 3.90)
- Massachusetts Institute of Technology (2012-2016)
 - S.M. in Electrical Engineering (GPA 5.0)
 - Ph.D in Electrical Engineering (GPA 5.0)

Experience

- The Brown Group, *University of California Santa Barbara (2008-2010)*
 - Works on electrical, optical, and mechanical development/design for imaging THz systems, THz spectrometers, and characterization of materials for THz generation.
- The Kaertner Group, *Massachusetts Institute of Technology (2012-2016)*
 - Construction of numerous ultrafast laser systems, including the generation of optical pulses spanning wavelengths ranges from the mid-infrared to the soft x-ray with peak powers in excess of 100GW.

Research Projects

- Near-IR Generation
 - Improvements made to a picosecond 1030nm laser source, with 50mJ pulse energy, based on cryogenically cooled Yb:YAG.
 - Construction of a 3 optical cycle 800nm laser source, with 50uJ pulse energy, based on optical parametric chirped-pulse amplification
- Mid-IR Generation
 - Construction of a single-optical-cycle 1.8-4.5um laser source, with 1uJ pulse energy, based on adiabatic difference frequency generation
 - Construction of a sub-single-optical-cycle 2.5-10um laser source, with 30uJ pulse energy, based on an optical parametric amplifier.
 - Improvements made to a 4 optical cycle 2.1um laser source, with 3800uJ pulse energy, based on optical parametric chirped-pulse amplification
- Terahertz Generation
 - Worked on several swept-frequency THz sources and spectrometers
 - Worked to characterize novel materials to be used as photomixers for THz generation

Selected Publications

- **Peter Krogen**, Haim Suchowski, Houkun Liang, Noah Flemens, Kyung-Han Hong, Franz X. Kärtner¹, Jeffrey Moses, "Generation and Arbitrary Shaping of Intense Single-Cycle Pulses in the Mid-Infrared," *Nature Photonics*. under review
- **Peter Krogen**, Houkun Liang, KT Zawilski, Peter G Schunemann, Tino Lang, Uwe Morgner, Jeffrey A Moses, Franz X Kaertner, Kyung-Han Hong, "Octave-spanning 1.5-optical-cycle 6.5- μm OPA pumped by 2.1- μm OPCPA," in *CLEO: Science and Innovations*, 2016, STu3I.4.
- C.-L. Chang, **P. Krogen**, K.-H. Hong, L. E. Zapata, J. Moses, A.-L. Calendron, H. Liang, C.-J. Lai, G. J. Stein, P. D. Keathley, G. Laurent, and F. X. Kärtner, "High-energy, kHz, picosecond hybrid Yb-doped chirped-pulse amplifier," *Opt. Express* **23**, 10132 (2015).
- H. Liang, **P. Krogen**, R. Grynko, O. Novak, C.-L. Chang, G. J. Stein, D. Weerawarne, B. Shim, F. X. Kärtner, and K.-H. Hong, "Three-octave-spanning supercontinuum generation and sub-two-cycle self-compression of mid-infrared filaments in dielectrics," *Optics Letters*, vol. 40, no. 6, pp. 1069–1072, 2015.
- **P. Krogen**, H. Suchowski, H. Liang, F. X. Kärtner, and J. Moses, "Toward Multi-Octave Pulse Shaping by Adiabatic Frequency Conversion," in *CLEO: Science and Innovations*, 2015, p. SW1O–3.
- **Peter R Krogen**, Haim Suchowski, Gregory J Stein, Franz X Kärtner, Jeffrey Moses, "Tunable Few-Cycle Mid-IR Pulses Towards Single-Cycle Duration by Adiabatic Frequency Conversion," in *Ultrafast Phenomena XIX*, 2015, p. 713-716.
- E. Swanwick, P. D. Keathley, A. Fallahi, **P. R. Krogen**, G. Laurent, J. Moses, F. X. Kärtner, and L. F. Velásquez-García, "Nanostructured ultrafast silicon-tip optical field-emitter arrays," *Nano letters*, vol. 14, no. 9, pp. 5035–5043, 2014.
- K.-H. Hong, C.-J. Lai, J. Siqueira, **P. Krogen**, J. Moses, L. C.-L. Chang, G. J. Stein, L. E. Zapata, and F. X. Kärtner "Multi-mJ, kHz, 2.1- μm optical parametric chirped-pulse amplifier and high-flux soft X-ray high-harmonic generation," *Opt. Lett.* **39**, 3145 (2014).
- Philip Lubin, Gary B Hughes, Johanna Bible, Jesse Bublitz, Josh Arriola, Caio Motta, Jon Suen, Isabella Johansson, Jordan Riley, Nilou Sarvian, Deborah Clayton-Warwick, Jane Wu, Andrew Milich, Mitch Oleson, Mark Pryor, **Peter Krogen**, Miikka Kangas, Hugh O'Neill, "Toward directed energy planetary defense," *Opt. Engineering*, vol. 53, no. 2, pp. 025103-025103 (2014).
- H. Suchowski, **P. R. Krogen**, S.-W. Huang, F. X. Kärtner, and J. Moses, "Octave-spanning coherent mid-IR generation via adiabatic difference frequency conversion," *Opt. Express* **21**, 28892-28901 (2013).

Honors/ Activities

- NDSEG Fellow (2013-2015)
- CLEO Maiman Award finalist (2013)
- IEEE Photonics Society member (2012-present)
- Optical Society of America member (2014-present)

References

Available upon request