LINGZE DUAN

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EDUCATION

Ph.D. Electrical Engineering	University of Maryland (College Park, MD)	2002
M.S. Electrical Engineering	University of Maryland (College Park, MD)	1998
B.S. Physics	Tsinghua University (Beijing, China)	1995

PROFESSIONAL EMPLOYMENT

Professor	Physics Department, UAH	2020 – present
Associate Professor	Physics Department, UAH	2013 – 2020
Assistant Professor	Physics Department, UAH	2007 – 2013
Postdoctoral Fellow	Physics Department, Penn State University	2004 – 2007
Postdoctoral Associate	Research Lab of Electronics, MIT	2002 – 2004

PROFESSIONAL MEMBERSHIPS

Senior Member, Institute of Electrical and Electronics Engineers (IEEE)
Senior Member, The Optical Society (OSA)
Member, IEEE Photonics Society (IPS)

AWARDS

Graduate Mentor Award	University of Alabama in Huntsville	2021
NSF CAREER Award	National Science Foundation	2013
Goldhaber Travel Award	University of Maryland	2002
Best Diploma Thesis	Tsinghua University	1995
Li Qing Fellowship	Tsinghua University	1994

RESEARCH INTERESTS

Ultrafast Spectroscopy – Time-frequency spectroscopy of photonic materials and devices; few-cycle pump-probe reflectometry; ultrafast carrier dynamics in semiconductor devices and metamaterials; coherent control of quantum states; time-stretch spectroscopy based on optical frequency combs.

Precision Metrology and Sensing – Precision measurement of various physical quantities (length, frequency, velocity, strain, temperature, etc.) based on optical frequency combs; instrumentation for high-precision imaging, spectroscopy and sensing; novel optoelectronic and microwave photonic modalities and systems.

Fiber Optics – Fundamental limits of fiber-optic sensors; ultrahigh-resolution fiber-optic sensing; various applications of fiber-optic sensors; fiber-optic lasers; fiber-optic communication components; soliton pulse propagation and supercontinuum generation in optical fibers.

MAJOR RESEARCH GRANTS

External Grants

12/2020 – 11/2021	EPA SU84015201: Distributed Fiber-optic Turbidity Sensor Network, Co-PI (PI: Dr. Tingting Wu), $25,000
08/2019 – 08/2021	AL ACHE GRSP: High-Resolution Fiber-Optic Sensing under Extreme Conditions, $50,000
01/2019 – 11/2020	NASA/EPSCoR R3: FY18 NASA EPSCoR Rapid Response: Development of Fiber-Optic High-Temperature Heat Flux Sensors for Venus Exploration (80NSSC19M0033, Sc-I), $100,000
08/2016 – 04/2021	NSF/EPMD: The Fundamental Limit of Fiber-Optic Sensors in the Infrasonic Region (ECCS-1606836, PI), $340,314
08/2015 – 08/2017	AL ACHE GRSP: Fiber-Optic Sensing at the Femto-strain Level, $50,000
05/2013 – 04/2019	NSF/CAREER: Semiconductor Detectors for Direct Probing of the Absolute Phase of Light (ECCS-1254902, PI), $407,898
02/2013 – 08/2016	NASA/EPSCoR RID: Compact, Low-Cost Semiconductor Lasers with Ultra-High Frequency Stability (NNX13AB09A, PI), $48,000
08/2012 – 08/2015	AL ACHE GRSP: High-Resolution Dynamic Range Metrology Using A Femtosecond-Laser Frequency Comb, $75,000
01/2011 – 12/2014	NSF/MRI: Acquisition of Menlo Systems FC1500 Optical Frequency Synthesizer (ECCS-1040019, PI), $280,011
02/2011 – 12/2012	NASA/EPSCoR RID: High-Precision Remote Measurement of Target Kinematics based on Femtosecond Frequency Comb Lasers (NNX07AL52A, PI), $15,000

Internal Grants (all as *Principal Investigator*)

07/2020 – 03/2021	UAH/CIF: A simple and versatile fiber-optic frequency discriminator based on PM-FBG, $12,976
01/2017 – 01/2018	UAH/CCFR: Fiber-Optic Acousto-Ultrasonic Sensing in Composites Structures, $5,000
01/2015 – 08/2016	UAH/RIF: Ultra-Stable Optical Metrology with Frequency Comb-Disciplined Multi-wavelength interferometry (RIF 15-050), $30,614
04/2014 – 03/2015	UAH/IIDR: Sol-Gel Fabrication of II-VI Quantum Dot Sensors for Ultrafast Nano-Photonics Research (IIDR 14-345), $38,193
04/2014 – 03/2015	UAH/RIF: Precise Control of Optical Field in Femtosecond Laser Pulses (RIF 14-410), $53,000
05/2013 – 09/2015	UAH/CCFR: Fundamental Thermomechanical Noise in Fiber-Optic Strain Sensors (CCFR 13-915), $10,000
04/2013 – 04/2014	UAH/RIF: Ultrafast Nanophotonics on the Optical-Cycle Scale (RIF 13-405), $35,240
05/2008 – 04/2009	UAH/URII: Fee-Space Transmission of an Optical Frequency Comb, $8,495
2008 – 2011	UAH Mini-Grants & JFDR: multiple awards, $38k total

ADVISING

Ph.D. Dissertations: 5

- Srikamal Soundararajan, "Time-Wavelength Optical Sampling Spectroscopy," (2021).
- Hemang Jani, "Ultrafast time-frequency spectroscopy based on few-cycle pump-probe transient reflectometry," (2020).
- Dipen Barot, "Analysis and Mitigation of Laser Frequency Drift and Its Applications in Fiber-Optic Sensing," (2019).
- Lin Yang, "Dynamic Optical Sampling by Cavity Tuning and its Applications in Ranging, Imaging and Spectroscopy," (2016).
- Ravi P. Gollapalli, "Phase Coherent Supercontinuum Generation and Atmospheric Delivery of Frequency References using a Femtosecond Frequency Comb," (2011).

M.S. Theses: 3

- Reem Alsalamah, "Direct measurement of the group velocity dispersion of air using a femtosecond frequency comb laser," (2014).
- Ayshah Alatawi, "An Experimental Study of Microwave Clock Transfer via Free-Space Transmission of Optical Frequency Combs," (2009).
- Charles A. Schambeau, "Applications of Velocity Selective Optical Pumping of Atomic Vapors Using Pump-Probe Spectroscopy," (2009).

Graduate Research Assistantship (GRA) Funded with Grants: 7

- Ravi P. Gollapalli (OSE, 2008–11), Lin Yang (OSE, 2011–16), Teng Guo (PH, 2012), Dipen Barot (OSE, 2014–19), Bing Zeng (OSE, 2015–19), Hemang Jani (OSE, 2013–20), Nabil Hoque (OSE, 2019– 2021)

Ph.D. Committees: 16

- Yang Zou (OSE, 2011), Prashant Raman (OSE, 2012), Po Sun (OSE, 2012), Boyang Zhang (OSE, 2014), Kira Patty (OSE, 2015), Thomas Walker (PH, 2015), Waylin Wing (OSE, 2017), Hong Guo (EE, 2018), Rithvik Gutha (OSE, 2019), Shane Thompson (PH, 2019), Tomasz Lis (PH, 2019), Reem Alsalamah (OSE, 2020), Jinnan Chen (EE, 2020), Zachary Robinson (PH, 2020), David K. Mefford (OSE, 2020), Motasim Alomari (ECE)

M.S. Committees: 13

- Po Sun (EE, 2011), Ali Nejat (PH, 2011), Satya Kachiraju (PH, 2011), Stephanie Medley (PH, 2012), Josh Bonner (PH, 2013), Jacqueline Andreozzi (EE, 2013), Jinlei Zheng (PH, 2014), Emily Layden (PH, 2015), Danielle Gurgew (PH, 2015), William Dent (PH, 2016), Christina Dent (PH, 2016), Zhitong Li (ECE, 2016), Xingjian Wang (PH, 2018)

Undergraduate Capstone Projects (PH499, HON499, OPE460): 30

Funded Undergraduate/High School Summer Research: 7

COURSES TAUGHT

PH 112	General Physics with Calculus II	(4 credits)
PH 115	General Physics Lab II	(2 credits)
PH 310	Intermediate Lab I	(2 credits)
OPT 341	Geometrical Optics	(3 credits)
OPT 342	Physical Optics	(3 credits)
OPT 411	Geometrical Optics Lab	(2 credits)
OPT 412	Physical Optics Lab	(2 credits)
OPT 442	Interference and Diffraction	(3 credits)
OPT 445	Introduction to Lasers	(3 credits)
PH 632	Fourier Optics	(3 credits)
PH 645	Lasers I	(3 credits)
PH 733	Quantum Devices	(3 credits)
PH 745	Lasers II	(3 credits)

SYNERGISTIC ACTIVITIES

Professional Services:

- Reviewer for the following scientific journals:
  Light: Science & Applications (Nature), Optica (OSA), Optics Express (OSA), Optics Letters (OSA), Applied Optics (OSA), Journal of Optical Society of America B (OSA), Photonic Research (OSA), Journal of Quantum Electronics (IEEE), Journal of Lightwave Technology (IEEE/OSA), Photonics Technology Letters (IEEE), Applied Physics Letters (AIP), Review of Scientific Instruments (AIP), Electronics Letters (IET), Sensors (MDPI)
- OSA Photonic Detection technical group executive committee (2015 – 2017)
- Organizer – OSA Photonic Detection Panel (Oct. 2015)
- NSF Proposal Review Panelist (2009, 2011, 2012, 2017, & 2018).
- NASA Postdoc Program Review Panelist (2011–2014 annually).
- Oak Ridge Associated Universities Ralph Powe Award Referee (2014 – 2016)
- Session Chair – Frontier in Optics/OSA Annual Meeting (2010).

Societal Services

- Program Chair of Huntsville Electro-Optical Society (Huntsville chapters of OSA and SPIE).
- Event supervisor in the North Alabama Regional Science Olympiad (2008–2014 annually).
- Topical Judge in Alabama Science and Engineering Fair (2008–2014 annually).
- Instructor in NSF-sponsored Hands-On-Optics training class for 5th-grade teachers (2009).
- Founder and Faculty Supervisor for UAH Society of Optics Students (SOS)

PUBLICATIONS

Patents

- Lingze Duan and Hemang Jani, *Few-Cycle Pump-Probe Reflectometer (FC-PPR)*, UAH-P-20041, Year of Filing: 2020, Current Status: pending.
- Dipen Barot and Lingze Duan, *Optical Frequency Discriminator Based on Fiber Bragg Gratings*, U.S. Patent Application No. 62/981,781, Year of Filing: 2021, Current Status: pending.
- Lingze Duan and Lin Yang, *Time-Wavelength Optical Sampling (TWOS) Spectrometer*, U.S. Patent Application, Year of Filing: 2018 (USPTO S/N 16/415,562), Current Status: pending.
- Lingze Duan and Dipen Barot, *Signal Analysis System and Methods*, US 10,812,184, 2020.

Journal/Book Publications

- Qianglong Fang, Yang Shen, Shuqin Zhang, Xiaodong Yang, Lingze Duan, Liang Chen, Shiqing Xu, Mingxia Gao, and Hongge Pan, "Impact of residual gas on the optoelectronic properties of Cs-sensitized $In_{0.53}Ga_{0.47}As$ (0 0 1) surface," J. Colloid Interface Sci. **594**, 47-53 (2021).
- Bing Zeng and Lingze Duan, "Analytical theory of carrier-envelope phase-dependent coherence driven by few-cycle pulses," Phys. Lett. A **398**, 127292 (2021).
- Unnati Patel, Kavini Rathnayake, Hemang Jani, Kalana W. Jayawardana, Rijan Dhakal, Lingze Duan, Surangi N. Jayawardena, "Near-infrared responsive targeted drug delivery system that offer chemo-photothermal therapy against bacterial infection," Nano Select **1**, 1-20 (2021). DOI: 10.1002/nano.202000271
- Qianglong Fang, Yang Shen, Xiaodong Yang, Shuqin Zhang, Liang Chen, Lingze Duan, and Shangzhong Jin, "Effect of residual gas on the optoelectronic properties of Mg-doped $Ga_{0.75}Al_{0.25}N$ (0 0 0 1) surface," Appl. Surface Sci. **551**, 149455 (2021).
- Qianglong Fang, Yang Shen, Zesen Liu, Xiaodong Yang, Shuqin Zhang, Liang Chen, Lingze Duan, and Shiqing Xu, "A DFT study on optoelectronic properties of near-infrared $In_{0.53}Ga_{0.47}As$ (001), (011) and (111) surfaces," Superlattices Microst. **149**, 106771 (2021).
- Nabil Md Rakinul Hoque and Lingze Duan, "Picostrain-resolution passive fiber-optic sensing down to sub-10 mHz infrasonic frequencies," J. Opt. Soc. Am. B **37**, 2773-2778 (2020).
- Ben Xu, F. P. Zhao, D. N. Wang, Chun-Liu Zhao, Jianqing Li, Minghong Yang, and Lingze Duan "Tip hydrogen sensor based on liquid filled in-fiber Fabry-Perot interferometer with Pt-loaded WO_3 coating," Meas. Sci. Technol. **31**, 125107 (2020).
- Nabil Md Rakinul Hoque and Lingze Duan, "Ultrahigh-resolution fiber-optic sensing using a high-finesse, meter-long fiber Fabry-Perot resonator," IEEE Photon. J. **12**, 7101109 (2020).
- Hemang Jani and Lingze Duan, "Time-frequency spectroscopy of GaAs transient dispersion using few-cycle pump-probe reflectometry," Phys. Rev. Appl., **13**, 054010 (2020).
- Liang Chen, Yang Shen, Xiaodong Yang, Muchun Jin, Songmin Liu, Lingze Duan, and Shiqing Xu, "Research on Cs/O activation process of near-infrared $In_{0.53}Ga_{0.47}As$ photocathodes," J. Alloys Compd., **831**, 154869 (2020).
- Hemang Jani, Liang Chen, and Lingze Duan, "Pre-emission study of photoelectron dynamics in a GaAs/AlGaAs photocathode," IEEE J. Quantum Electron. **56**, 4000208 (2020).

- Ben Xu, Ran Chang, Ping Li, D. N. Wang, Chun-Liu Zhao, Jianqing Li, Minghong Yang, and Lingze Duan "Reflective optical fiber sensor based on light polarization modulation for hydrogen sensing," J. Opt. Soc. Am. B **36**, 3471-3478 (2019).
- Srikamal Soundararajan and Lingze Duan, "Time-stretch spectroscopy based on laser cavity tuning with a dual-function delay line," IEEE Photon. Tech. Lett., **31**, 1385-1388 (2019).
- Dipen Barot, Gang Wang, and Lingze Duan, "High resolution dynamic strain sensor using a polarization maintaining fiber Bragg grating," IEEE Photon. Tech. Lett. **31**, 709-712 (2019).
- Zesen Liu, Liang Chen, Shuqin Zhang, Shalu Zhu, Yunsheng Qian, Hemang Jani, and Lingze Duan, "Comparative study of Cesium adsorption on GaN planar and nanowire photocathodes," J. Nanophotonics **13**, 016011 (2019).
- Chunfang Rao and Lingze Duan, "Bidirectional, bimodal ultrasonic lamb wave sensing in a composite plate using a polarization-maintaining fiber Bragg grating," Sensors **19**, 1375 (2019).
- Shalu Zhu, Liang Chen, Yunshen Qian, Hemang Jani, and Lingze Duan, "Characteristic research of uniform-doping and exponential-doping $Ga_{1-x}Al_xAs$/GaAs photocathode with femtosecond laser illumination," Optik **183**, 629-634 (2019).
- Lin Yin, Liang Chen, Shuqin Zhang, Yunsheng Qian, Hemang Jani, and Lingze Duan, "Femtosecond ultrafast dynamics study on the photoemission performance of reflection-mode GaAlAs photocathode," Mater. Sci. Semicond. Process. **91**, 27-30 (2019).
- Aiming Feng, Lin Yin, Shuqin Zhang, Liang Chen, Yunshen Qian, Hemang Jani, and Lingze Duan, "Femtosecond pump-probe spectroscopy investigation of carrier T dynamics in GaAlAs photocathodes," Optik **179**, 336-340 (2019).
- Bing Zeng and Lingze Duan, "Carrier-envelope phase sensitive inversion driven by few-cycle pulse pairs," OSA Continuum **1**, 1304-1312 (2018).
- Srikamal Soundararajan, Lin Yang, Shuqin Zhang, Hemang Jani, and Lingze Duan, "Time-wavelength optical sampling based on dynamic laser cavity tuning," J. Opt. Soc. Am. B **35**, 1186-1191 (2018).
- Dipen Barot and Lingze Duan, "Laser frequency analysis aided by electronic frequency dividers," IEEE J. Lightwave Technol. **36**, 2524-2530 (2018).
- Richard Lieu and Lingze Duan, "Does light from steady sources bear any observable imprint of the dispersive intergalactic medium?" ApJ. **853**, 135 (2018).
- Lingze Duan and Lin Yang, "Ultrafast optical sampling finds applications in precision measurement (invited)," J. Sci. Ind. Metrol. **1**, 1-5 (2016).
- Lin Yang and Lingze Duan, "Depth-resolved imaging based on optical sampling by cavity tuning," IEEE Photon. Tech. Lett. **27**, 1761-1764 (2015).
- Changjun Hu, Ravi P. Gollapalli, Lin Yang, and Lingze Duan, "Excess phase noise characterization in multifrequency remote clock distribution based on femtosecond frequency combs," Appl. Sci. **5**, 77-87 (2015).
- Hemang Jani and Lingze Duan, "Acid-free sol-gel fabrication of glass thin films embedded with II-VI colloidal quantum dots," J. Nanophotonics **9**, 093072 (2015).
- Lingze Duan, "Thermal noise-limited fiber-optic sensing at infrasonic frequencies," IEEE J. Quantum Electron. **51**, 7700106 (2015).

- Richard Lieu, Tom W. B. Kibble, and Lingze Duan, "A method to improve the sensitivity of radio telescopes," ApJ **798**, 67 (2015).
- Richard Lieu, Lingze Duan, and Tom W. B. Kibble, "Measurement of the dispersion of radiation from a steady cosmological source," ApJ. **778**, 73 (2013).
- Richard Lieu and Lingze Duan, "A new way of detecting intergalactic baryons," ApJ Lett. **763**, L44 (2013).
- Lin Yang, Jinsong Nie, and Lingze Duan, "Dynamic optical sampling by cavity tuning and its application in lidar," Opt. Express **21**, 3850-3860 (2013).
- Jinsong Nie, Lin Yang, and Lingze Duan, "Atmospheric transfer of a radio-frequency clock signal with a diode laser," Appl. Opt. **51**, 8190-8194 (2012).
- Lingze Duan, "A general treatment of the thermal noises in optical fibers," Phys. Rev. A **86**, 023817 (2012).
- Lingze Duan and Ravi P. Gollapalli, "Atmospheric clock transfer based on femtosecond frequency combs," in *Photodetector,* edited by Sanka Gateva, (INTECH, 2011, ISBN 979-953-307-350-6) Ch. 16.
- Ravi P. Gollapalli and Lingze Duan, "Multiheterodyne characterization of excess phase noise in atmospheric transfer of a femtosecond-laser frequency comb," J. Lightwave Technol. **29**, 3401-3407 (2011).
- Lingze Duan, "Intrinsic thermal noise of optical fibers due to mechanical dissipation," Electron. Lett. **46**, 1515-1516 (2010).
- Ravi P. Gollapalli and Lingze Duan, "Atmospheric timing transfer using a femtosecond frequency comb," IEEE Photon. Journal **2**, 904-910 (2010).
- Ayshah Alatawi, Ravi P. Gollapalli, and Lingze Duan, "Radio frequency clock delivery via free-space frequency comb transmission," Opt. Lett. **34**, 3346-3348 (2009).
- Lingze Duan and Kurt Gibble, "Locking lasers with large FM noise to high-Q cavities," Opt. Lett. **30**, 3317-3319 (2005).
- Christian Jirauschek, Lingze Duan, Oliver D. Mücke, Franz X. Kaertner, Klaus. D. Hof, Thorsten Tritschler, and Martin D. Wegener, "Carrier-envelope phase sensitive inversion," J. Opt. Soc. Am. B **22**, 2065-2075 (2005).
- Lingze Duan, Mario Dagenais and Julius Goldhar, "Smoothly wavelength-tunable picosecond pulse generation using a harmonically mode-locked fiber ring laser," J. Lightwave Technol. **21**, 930-937 (2003).
- Lingze Duan, Christopher J. K. Richardson, Zhaoyang Hu, Mario Dagenais and Julius Goldhar, "A stable, smoothly wavelength-tunable picosecond pulse generator," IEEE Photon. Technol. Lett. **14**, 840-842 (2002).
- A. N. Vlasov, A. G. Shkvarunets, J. Rodgers, Y. Carmel, T. M. Antonsen Jr., T Abu-Elfadi, L. Duan, V. A. Cherpenin, G. S. Nusinovich, M. Botton, and V. L. Granatstein, "Overmoded GW-class surface wave microwave oscillator," IEEE Trans Plasma Sci. **28**, 550-560 (2000).
- A. G. Shkvarunets, S. Kobayashi, Y. Carmel, J. Rodgers, T. M. Antonsen Jr., L. Duan, and V. L. Granatstein, "Operation of a relativistic backward-wave oscillator filled with a preionized, high-density radially inhomogeneous plasma," IEEE Trans. Plasma Sci. **26**, 646-652 (1998).

- S. Kobayashi, M. Botton, Y. Carmel, T. M. Antonsen Jr., J. Rodgers, A. G. Shkvarunets, A. N. Vlasov, L. Duan, and V. L. Granatstein, "Electromagnetic properties of periodic cavities coupled to a radiating antenna," IEEE Trans. Plasma Sci. **26**, 947-954 (1998).
- Lingze Duan, Quanfeng Li, and Yumin Hu, "Experimental research on microwave measurement of moisture in tobacco," Journal of Microwaves **12**, 62-67 (1996).

Refereed Conference Publications

- Bing Zeng and Lingze Duan, "Low-power carrier-envelope phase detection using few-cycle pulse pairs," *OSA Frontiers in Optics + Laser Science APS/DLS 2020*, Technical Digest (Optical Society of America, 2020), paper JM6A.29.
- Srikamal Soundararajan and Lingze Duan, "Time-wavelength optical sampling under low light," *OSA Frontiers in Optics + Laser Science APS/DLS 2020*, Technical Digest (Optical Society of America, 2020), paper FW7A.5.
- Nabil Hoque and Lingze Duan, "Fiber-optic static-strain sensing with single & dual fiber Fabry-Perot interferometers," *OSA Frontiers in Optics + Laser Science APS/DLS 2020*, Technical Digest (Optical Society of America, 2020), paper FTh5A.6.
- Rui Zhou, Hemang Jani, and Lingze Duan, "Direct evidence of drift-assisted carrier transportation in a gradient-doped GaAs photocathode," *Conference on Lasers and Electro-Optics (CLEO) 2020*, Technical Digest (Optical Society of America, 2020), paper JW2A.75.
- Dipen Barot and Lingze Duan, "Optical frequency discriminator based on polarization-maintaining fiber Bragg gratings," *Conference on Lasers and Electro-Optics (CLEO) 2020*, Technical Digest (Optical Society of America, 2020), paper JTu2A.18.
- Nabil Hoque and Lingze Duan, "Sub-100 fε dynamic strain sensing using a meter-long, high-finesse fiber Fabry-Perot interferometer," *Conference on Lasers and Electro-Optics (CLEO) 2020*, Technical Digest (Optical Society of America, 2020), paper AM1K.4.
- Dipen Barot and Lingze Duan, "A Novel Frequency-Modulation (FM) Demodulator for Microwave Photonic Links based on Polarization-Maintaining Fiber Bragg Grating," *Optical Fiber Communication Conference (OFC) 2020*, Technical Digest (Optical Society of America, 2020), paper M1C.7.
- Hemang Jani, Rui Zhou, Yijun Zhang, Yunsheng Qian, and Lingze Duan, "Pump-probe study of ultrafast response of GaAs photocathodes grown by MOCVD and MBE," Proc. SPIE 11278, Ultrafast Phenomena and Nanophotonics XXIV, 112780R (27 February 2020).
- Nabil Hoque and Lingze Duan, "Direct frequency locking of a diode laser to a meter-long high-finesse fiber Fabry-Perot cavity," *Conference on Lasers and Electro-Optics (CLEO) 2019*, Technical Digest (Optical Society of America, 2019), paper SM1L.4.
- Dipen Barot and Lingze Duan, "Strain sensitivity enhancement by polarization-maintaining fiber Bragg gratings," *Conference on Lasers and Electro-Optics (CLEO) 2019*, Technical Digest (Optical Society of America, 2019), paper AF1K.3.
- Hemang Jani and Lingze Duan, "Wavelength-resolved pump-probe transient-reflectivity characterization of optoelectronic devices," Proc. SPIE 10916, Ultrafast Phenomena and Nanophotonics XXIII, 109161V (27 February 2019).

- Srikamal Soundararajan, Lin Yang, and Lingze Duan, “Ultrafast optical sampling spectroscopy based on dispersive Fourier transformation,” *Conference on Lasers and Electro-Optics (CLEO) 2018*, Technical Digest (Optical Society of America, 2018), paper AF2Q.4.
- Dipen Barot and Lingze Duan, "Effects of electronic frequency dividers on angle modulated signals and their potential applications in frequency analysis frequency analysis," *2018 IEEE Int'l Frequency Control Symposium (IFCS)*, (May 21-24, Olympic Valley, CA), ThP 12.
- Hemang Jani, Liang Chen, and Lingze Duan, "Femtosecond pump-probe study of negative electron affinity GaAs/AlGaAs photocathodes," Proc. SPIE 10530, Ultrafast Phenomena and Nanophotonics XXII, 105300X (22 February 2018).
- Dipen Barot and Lingze Duan, "Electronic frequency divider as a tool for phase/frequency noise analysis," in *Frontiers in Optics 2017*, OSA Technical Digest (online) (OSA, 2017), paper JTu2A.47.
- Bing Zeng and Lingze Duan, “Carrier-envelope phase-dependent coherence in two-level systems interacting with few-cycle pulse pairs,” *Conference on Lasers and Electro-Optics (CLEO) 2017*, Technical Digest (Optical Society of America, 2017), paper JTh2A.
- Lin Yang, Shuqin Zhang, Srikamal Soundararajan, and Lingze Duan, “Time-wavelength optical sampling based on laser cavity tuning,” *Conference on Lasers and Electro-Optics (CLEO) 2017*, Technical Digest (Optical Society of America, 2017), paper JW2A.
- Lingze Duan, "Probing the intrinsic thermal noise of optical fibers at infrasonic frequencies," in *Frontiers in Optics 2015*, OSA Technical Digest (online) (Optical Society of America, 2015), paper FTh4E.3.
- Lin Yang and Lingze Duan, "Optical coherence tomography and profilometry based on optical sampling by cavity tuning," in *Frontiers in Optics 2015*, OSA Technical Digest (online) (Optical Society of America, 2015), paper FW4E.4.
- Hemang Jani and Lingze Duan, "Acid-free Sol-Gel fabrication of quantum-dot thin films for ultrafast nanophotonics research," *2015 IEEE Photonics Conference* (Oct. 4-8, Reston, VA), TuH 2.5.
- Ravi P. Gollapalli, Changjun Hu, Lin Yang, and Lingze Duan, "Multiheterodyne measurement of acoustically induced phase noise in fiber-optic transfer of an optical frequency comb," *2015 IEEE Photonics Conference* (Oct. 4-8, Reston, VA), ThB 1.3.
- Lin Yang, Jinsong Nie, and Lingze Duan, “A lidar based on optical sampling by cavity tuning,” in *Conference on Lasers and Electro-Optics (CLEO), 2013*, Technical Digest (Optical Society of America, 2013), paper JW2A.
- Lingze Duan, “Intrinsic thermodynamic noise in passive fiber systems,” in *Frontiers in Optics (FiO)/Laser Science XXVI (LS) Conference, 2012*, Technical Digest (Optical Society of America, 2012), paper FTh1D.
- Lingze Duan, “Structural damping-induced thermal noise in fiber interferometric systems,” in *Frontiers in Optics (FiO)/Laser Science XXVI (LS) Conference, 2010,* Technical Digest (Optical Society of America, 2010), paper FMC3.
- Ravi P. Gollapalli and Lingze Duan, “Delivery of optical frequency references through atmosphere using a frequency comb,” in *Frontiers in Optics (FiO)/Laser Science XXVI (LS) Conference, 2010*, Technical Digest (Optical Society of America, 2010), paper FTuL5.

- Ravi P. Gollapalli and Lingze Duan, "Atmospheric delivery of a microwave clock using an optical frequency comb," in *Conference on Lasers and Electro-Optics (CLEO), 2010*, Technical Digest (Optical Society of America, 2010), paper CTuDD2.
- Lingze Duan and Kurt Gibble, "Locking lasers with large FM noise to high-Q cavities," *Frontier in Optics (FiO) 2005*, Technical Digest (Optical Society of America, 2005), paper FMF6.
- Lingze Duan and Kurt Gibble, "Locking lasers with large FM noise to high-Q cavities," *Frequency Control Symposium and Exposition 2005*, Proceedings of the 2005 IEEE International, pp. 928-931, August, 2005.
- Christian Jirauschek, Lingze Duan, Oliver D. Mücke, Franz X. Kaertner, Klaus. D. Hof, Thorsten Tritschler, and Martin D. Wegener, "Semiconductor-based carrier-envelope phase detection," in *Conference on Lasers and Electro-Optics (CLEO) 2004*, Technical Digest (Optical Society of America, 2004), paper JTuB2.
- Christian Jirauschek, Juhi Chandalia, Lingze Duan, Franz X. Kaertner, Oliver D. Mücke, Thorsten Tritschler, and Martin D. Wegener, "Opto-electronic carrier-envelope-phase detection," in Digest of *LEOS Summer Topical Meetings: Holey Fibers and Photonic Crystals / Polarization Mode Dispersion / Photonics Time / Frequency Measurement and Control,* (Optical Society of America, 2003), TuC2.3/41-42.
- Lingze Duan, James Jones and Julius Goldhar, "The characterization of a simple, smoothly wavelength-tunable harmonically mode-locked fiber ring laser," in *Conference on Lasers and Electro-Optics (CLEO) 2003*, Technical Digest (Optical Society of America, 2003), paper CWD1.
- Lingze Duan, Christopher J. K. Richardson, Mario Dagenais and Julius Goldhar, "Study of a dispersion-tuned, harmonically mode-locked fiber ring laser with a SOA," in *Conference on Lasers and Electro-Optics (CLEO) 2002*, Technical Digest (Optical Society of America, 2003), paper CThR5.
- Lingze Duan, Christopher J. K. Richardson, Zhaoyang Hu, Mario Dagenais and Julius Goldhar, "A stable, dispersion-tuned harmonically mode-locked fiber ring laser using a SOA," in *Optical Fiber Communication Conference (OFC) 2002*, Technical Digest (Optical Society of America, 2002), paper ThGG27.

PRESENTATIONS AND TALKS

Conference Presentations

- Bing Zeng and Lingze Duan, "Low-power carrier-envelope phase detection using few-cycle pulse pairs," OSA Frontiers in Optics (FiO) + Laser Science APS/DLS 2020 (by OSA & APS), Washington, DC, USA (Sep. 14-17, 2020).
- Nabil Hoque and Lingze Duan, "Fiber-optic static-strain sensing with single & dual fiber Fabry-Perot interferometers," OSA Frontiers in Optics (FiO) + Laser Science APS/DLS 2020 (by OSA & APS), Washington, DC, USA (Sep. 14-17, 2020).
- Srikamal Soundararajan and Lingze Duan, "Time-wavelength optical sampling under low light," OSA Frontiers in Optics (FiO) + Laser Science APS/DLS 2020 (by OSA & APS), Washington, DC, USA (Sep. 14-17, 2020).

- Rui Zhou, Hemang Jani, and Lingze Duan, "Direct evidence of drift-assisted carrier transportation in a gradient-doped GaAs photocathode," Conference on Lasers and Electro-Optics (CLEO) (by OSA & IEEE), San Jose, CA, USA (May 10-15, 2020).
- Dipen Barot and Lingze Duan, "Optical frequency discriminator based on polarization-maintaining fiber Bragg gratings," Conference on Lasers and Electro-Optics (CLEO) (by OSA & IEEE), San Jose, CA, USA (May 10-15, 2020).
- Nabil Hoque and Lingze Duan, "Sub-100 fε dynamic strain sensing using a meter-long, high-finesse fiber Fabry-Perot interferometer," Conference on Lasers and Electro-Optics (CLEO) (by OSA & IEEE), San Jose, CA, USA (May 10-15, 2020).
- Barot, D. and Duan, L., "A Novel Frequency-Modulation (FM) Demodulator for Microwave Photonic Links based on Polarization-Maintaining Fiber Bragg Grating," Optical Fiber Communication Conference (OFC) (by OSA & IEEE), San Diego, CA, USA (Mar. 8-12, 2020).
- Jani, H., Zhou, R., Zhang, Y., Qian, Y., and Duan, L., "Pump-probe study of ultrafast response of GaAs photocathodes grown by MOCVD and MBE," Photonics West 2020 (by SPIE), San Francisco, CA. (Feb. 1-6, 2020).
- Zhou, R., Jani, H., and Duan, L., "Free-electron dynamics comparison between uniform-doped and gradient-doped GaAs photocathodes," 2020 Alabama Materials Science Student Research Symposium, Birmingham, AL (Jan. 17, 2020).
- Barot, D., Wang, G., and Duan, L., "High resolution dynamic strain sensor using a polarization maintaining fiber Bragg grating," 2019 IEEE Photonics Conference (IPC), San Antonio, TX (Sep. 29–Oct. 3).
- Hoque, N. and Duan, L., "Direct frequency locking of a diode laser to a meter-long high-finesse fiber Fabry-Perot cavity," Conference on Lasers and Electro-Optics 2019 (OSA/IEEE), San Jose, CA (May 5-10, 2019).
- Barot D. and Duan, L., "Strain sensitivity enhancement by polarization-maintaining fiber Bragg gratings," Conference on Lasers and Electro-Optics 2019 (OSA/IEEE), San Jose, CA (May 5-10, 2019).
- Jani, H. and Duan, L., "Wavelength-resolved pump-probe transient reflectometry for optoelectronic device characterization," Photonics West 2019 (SPIE), San Francisco, CA. (Feb. 2-7, 2019).
- Zeng, B. and Duan L., "Low-power carrier-envelope phase sensitive inversion using few-cycle pulse pairs," 2018 Siegman International School on Lasers (OSA Foundation), Island of Hven, Sweden (July 28-Aug. 4, 2018).
- Barot, D. and Duan, L., "Effects of electronic frequency dividers on angle modulated signals and their potential applications in frequency analysis frequency analysis," 2018 IEEE Int'l Frequency Control Symposium (IEEE), Olympic Valley, CA (May 21-24, 2019).
- Soundararajan, S., Yang, L., and Duan, L., "Ultrafast optical sampling spectroscopy based on dispersive Fourier transformation," Conference on Lasers and Electro-Optics 2018 (OSA/IEEE), San Jose, CA (May 13-18, 2018).
- Jani, H., Chen, L., and Duan, L., "Femtosecond pump-probe study of GaAs/AlGaAs photocathode structures," SPIE Photonics West 2018, San Francisco, CA. (Jan. 27-Feb. 1, 2018).

- Duan, L., "Invited Talk: Ultrafast optical sampling and its applications in imaging, spectroscopy and lidar," EMN Ultrafast Meeting 2017, Orlando, FL. (Oct. 2-6, 2017).
- Barot, D. and Duan, L., "Electronic frequency divider as a tool for phase/frequency noise analysis," Frontier in Optics/Laser Science Conference 2017 (OSA/APS), Washington, DC. (Sep. 18-21, 2017).
- Jani, H. and Duan, L., 2017 Siegman International School on Lasers (by OSA Foundation), "Ultrafast nanophotonics: quantum dot thin-film sensor fabrication and few-cycle pump-probe spectroscopy," Leon, Mexico. (Aug. 6-11, 2017).
- Zeng, B. and Duan L., "Carrier-envelope phase-dependent coherence in two-level systems interacting with few-cycle pulse pairs," Conference on Lasers and Electro-Optics 2017 (OSA/IEEE), San Jose, CA (May 14-19, 2017).
- Yang, L., Zhang, S., Soundararajan, S., and Duan, L., "Time-wavelength optical sampling based on laser cavity tuning," Conference on Lasers and Electro-Optics 2017 (OSA/IEEE), San Jose, CA (May 14-19, 2017).
- Whitfield, Z., Jani, H., Weimer, J. J., and Duan, L., AL AoS 2016, "Digital Imaging and Fluorescence Characterization of Langmuir Film of Quantum Dots," Alabama Academy of Science, Florence, AL. (February 17, 2016).
- Barot, D., Yang, L., and Duan, L., Alabama Science and Technology Open House, "Optical Metrology, Imaging and Sensing based on Femtosecond Optical Frequency combs," AL EPSCoR, Montgomery, AL. (February 5, 2016).
- Duan, L., 2015 Frontiers in Optics/Laser Sciences, "Probing the intrinsic thermal noise of optical fibers at infrasonic frequencies," OSA/APS, San Jose, CA. (October 22, 2015).
- Yang, L. and Duan, L., 2015 Frontiers in Optics/Laser Sciences, "Optical coherence tomography and profilometry based on optical sampling by cavity tuning," OSA/APS, San Jose, CA. (October 21, 2015).
- Gollapalli, R. P., Hu, C., Yang, L., and Duan, L., 2015 IEEE Photonics Conference, "Multiheterodyne measurement of acoustically induced phase noise in fiber-optic transfer of an optical frequency comb," IEEE, Reston, VA. (October 8, 2015).
- Jani, H. and Duan, L., 2015 IEEE Photonics Conference, "Acid-free Sol-Gel fabrication of quantum-dot thin films for ultrafast nanophotonics research," IEEE, Reston, VA. (October 6, 2015).
- Yang, L., Nie, J., and Duan, L., "A lidar based on optical sampling by cavity tuning," Conference on Lasers and Electro-Optics (CLEO), 2013 (San Jose, CA, June 12, 2013).
- Yang, L. and Duan, L., "Dynamic optical sampling by cavity tuning and its applications," The AL EPSCoR Annual Meeting, 2014, (Montgomery, AL, February 7-8, 2014)
- Yang, L. and Duan, L., "Dynamic optical sampling by cavity tuning and its application in lidar," The 6th Wernher von Braun Memorial Symposium, (Huntsville, AL, Oct. 7-10, 2013).
- Yang, L. and Duan, L., "Dynamic optical sampling by cavity tuning and its application in lidar," The AL EPSCoR Annual Meeting, 2013, (Montgomery, AL, April 5-6, 2013)
- Duan, L., "Intrinsic thermodynamic noise in passive fiber systems," 2012 Frontiers in Optics/Laser Science XXVI Conference, (Rochester, NY, Oct.18, 2012)

- Duan, L., "Structural damping-induced thermal noise in fiber interferometric systems," 2010 Frontiers in Optics (FiO)/Laser Science XXVI (LS) Conference (Rochester, NY, October 25-29, 2010).
- Gollapalli, R. P. and Duan, L., "Delivery of optical frequency references through atmosphere using a frequency comb," 2010 Frontiers in Optics (FiO)/Laser Science XXVI (LS) Conference (Rochester, NY, October 25-29, 2010).
- Gollapalli, R. P. and Duan, L., "Atmospheric delivery of a microwave clock using an optical frequency comb," 2010 Conference on Lasers and Electro-Optics (CLEO), (San Jose, CA, May 16-21, 2010).
- Gollapalli, R. P. and Duan, L., "Phase evolution of femtosecond pulses in an erbium-doped fiber amplifier," 2009 Chandra Vikram Conference, (Huntsville, AL, April 30, 2009).
- Gollapalli, R. P. and Duan, L., "Phase-coherent supercontinuum generation based on a femtosecond fiber laser," 2009 Chandra Vikram Conference, (Huntsville, AL, April 30, 2009).
- Gollapalli, R. P. and Duan, L., "A numerical study of instantaneous-phase evolution of femtosecond pulses in an erbium-doped fiber amplifier," IEEE Southeast Conference, (Atlanta, GA, March 6, 2009).
- Gollapalli, R. P. and Duan, L., "Numerical study of femtosecond pulse propagation in EDFA for optimization of phase-coherent supercontinuum generation," Alabama EPSCoR Annual Conference, (Montgomery, AL, July 22, 2008).
- Duan, L., "Optical frequency combs and their applications," 2008 Chandra S. Vikram Memorial Conference, (Huntsville, AL, April, 2008).
- Duan, L. and Gibble, K., "Locking lasers with large FM noise to high-Q cavities," 2005 Frontiers in Optics (FiO)/Laser Science (LS) Conference, (Tucson, AZ, October 16-21, 2005).
- Duan, L. and Gibble K., "Locking lasers with large FM noise to high-Q cavities," Frequency Control Symposium and Exposition 2005, (Vancouver, Canada, August 29-31, 2005).
- Duan, L., Jirauschek, C., Mücke, O. D., and Kaertner, F. X., "Semiconductor-based carrier-envelope phase detection," Gordon Research Conference: Nonlinear Optics & Lasers, (Colby-Sawyer College, New London, NH, July 27-August 1, 2003).
- Jirauschek, C., Chandalia, J., Duan, L., Kaertner, F. X., Mücke, O. D., Tritschler, T., and Wegener, M. D., "Opto-electronic carrier-envelope-phase detection," LEOS Summer Topical Meetings: Holey Fibers and Photonic Crystals / Polarization Mode Dispersion / Photonics Time / Frequency Measurement and Control, (Vancouver, Canada, July 14-16, 2003).
- Jirauschek, C., Duan, L., Mücke, O. D., Kaertner, F. X., Hof, K. D., Tritschler, T., and Wegener, M. D., "Semiconductor-based carrier-envelope phase detection," Conference on Lasers and Electro-Optics (CLEO) 2004, (San Francesco, CA, May 16-21, 2004).
- Duan, L., Jones, J., and Goldhar, J., "The characterization of a simple, smoothly wavelength-tunable harmonically mode-locked fiber ring laser," Conference on Lasers and Electro-Optics (CLEO) 2003, (Baltimore, MD, June 1-6, 2003).
- Duan, L., Richardson, C. J. K., Dagenais, M., and Goldhar, J., "Study of a dispersion-tuned, harmonically mode-locked fiber ring laser with a SOA," Conference on Lasers and Electro-Optics (CLEO) 2002, (Long Beach, CA, May 19-24, 2002).

- Duan, L., Richardson, C. J. K., Hu, Z., Dagenais, M., and Goldhar, J., "A stable, dispersion-tuned harmonically mode-locked fiber ring laser using a SOA," Optical Fiber Communication Conference (OFC) 2002, (Anaheim, CA, March 17-22, 2002).

Invited Talks / Seminars

- Duan, L., "In a blink of an electron – Ultrafast optics and its applications," Guest Lecture at PH 110 Class, (Sep. 21, 2018).
- Duan, L., "Ultrafast spectroscopy based on femtosecond lasers," UAH Physics Colloquium (Sep. 4, 2018).
- Duan, L. "Ultrafast spectroscopy based on femtosecond lasers," Invited talk at China Jiliang University, Hangzhou, China. (June 4, 2018).
- Duan, L., "Invited Talk: Ultrafast optical sampling and its applications in imaging, spectroscopy and lidar," EMN Ultrafast Meeting 2017, Orlando, FL. (Oct. 2-6, 2017).
- Duan, L., "Precision ultrafast light sciences (PULS) at UAH," UAH Society of Optics Students, (August 25, 2017).
- Duan, L., "Ultrafast optics in the few-cycle regime," UAH Physics Colloquium (August 22, 2017).
- Duan, L., " Ultrafast Optical Sampling and Its Applications in Spectroscopy, Metrology and Imaging," China Jiliang University, Hangzhou, China. (May 11, 2016).
- Duan, L., "Spontaneous Phase Noise in Optical Fibers and Its Thermodynamic Model," UAH Department of Mathematics, Huntsville, AL. (March 11, 2016).
- Duan, L., "Ultrafast Optical Sampling and Its Applications in Spectroscopy, Metrology and Imaging," Department of Physics, University of Alabama at Birmingham, Birmingham, AL. (February 5, 2016).
- Duan, L., "Ultrafast Optical Sampling and Its Applications in Spectroscopy, Metrology and Imaging," UAH Department of Physics, Huntsville, AL. (November 17, 2015).
- Duan, L., "Ultrafast Optical Sampling and Its Applications in Spectroscopy, Metrology and Imaging," Huntsville Electro-Optical Society (HEOS), Huntsville, AL. (June 18, 2015).
- Duan, L., NSF Career Award Winner Workshop, "Semiconductor Detectors for Direct Probing of the Absolute Phase of Light," NSF/OSA, San Jose, CA. (June 13, 2014).
- Duan, L., "Ultrafast photonics in Rocket City," Chinese Academy of Sciences, Beijing, China. (May 20, 2014).
- Duan, L., "Femtosecond Frequency Combs and Their Applications," Peking University, Beijing, China. (May 16, 2014).
- Duan, L., "Femtosecond Frequency Combs and Their Applications," National Institute of Metrology (NIM), Beijing, China. (May 15, 2014).
- Duan, L., "Femtosecond Frequency Combs and Their Applications," State Key Lab of Pulse Power Laser Technology, Hefei, China. (May 9, 2014).
- Duan, L., "Ultrafast photonics in Rocket City," Univ. of Science and Technology of China (USTC), Hefei, China. (May 8, 2014).

- Duan, L., "Femtosecond frequency combs and their applications," UAH Physics Seminar (March 11, 2014).
- Duan, L., "Intrinsic thermal noise in optical fibers," UAH Physics Department Colloquium (Oct.16, 2012)
- Duan, L., "High-precision frequency metrology with femtosecond frequency combs," Department of Physics, University of Alabama in Birmingham (UAB), Birmingham, AL. (April 15, 2011).
- Duan, L., "Atmospheric timing transfer using femtosecond frequency combs," Biodesign Institute of the Arizona State University (ASU), Tempe, AZ. (November 19, 2010).
- Duan, L., "An overview of research activities at the PULS," Teledyne-Brown Inc., Huntsville, AL. (October 22, 2010).
- Duan, L., "Clock distribution based on optical frequency combs," UAH Physics Department Colloquium (November 17, 2009).
- Duan, L., "Clock distribution based on optical frequency combs," Army's Aviation and Missile Research, Development and Engineering Center (AMRDEC), Huntsville, AL. (November 12, 2009).
- Duan, L., "Lasers and their applications," Benchmark Inc., Huntsville, AL. (April 23, 2009).
- Duan, L., "Toward greater control of light: ultrafast & ultrastable lasers," Department of Physics, University of Alabama in Huntsville, Huntsville, AL. (May 2, 2007).
- Duan, L., "Toward greater control of light: ultrafast & ultrastable lasers," Department of Electrical & Computer Engineering, Michigan Technological University, Houghton, MI. (March 17, 2007).
- Duan, L., "Reaching the ultimate harmony: new development in ultrafast solid-state laser technology and applications," Precision Photonics Inc., Boulder, CO. (July 15, 2004).
- Duan, L., "Smoothly wavelength-tunable, harmonically mode-locked fiber ring lasers," Research Laboratory of Electronics (RLE), MIT, Cambridge, MA. (August 2002).
- Duan, L., "Smoothly wavelength-tunable, harmonically mode-locked fiber ring lasers," Department of Electrical Engineering & Computer Science, Northwestern University, Evanston, IL. (June 2002).