

# Spencer Windhorst Jolly

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**Name:** Spencer Windhorst Jolly  
**Citizenship:** USA, born in 1989 (Belgian resident)  
**Family status:** married with two children

**ORCID:** 0000-0002-5783-2081  
**ResearcherID:** A-6433-2019

## Education:

Universität Hamburg Ph.D. Physics (Dr. rer. nat.), January 2018

Grade: 1.0 ("very good", magna cum laude)  
Supervisors: Andreas Maier and Franz Kärtner  
Dissertation: *Spectral Phase Manipulation of Optical Pump Pulses for mJ-Level Narrowband Terahertz Generation in PPLN*

University of Texas at Austin M.A. Physics, May 2014

Supervisor: Michael Downer  
Thesis: *Two-Color High Intensity Laser Plasma Interaction Phenomena, and Status of Experiments on the UT<sup>3</sup> Laser System*

University of Michigan - Ann Arbor B.S.E. Engineering Physics, May 2012

Supervisor: Alec Thomas

## Research/Work Experience:

Lecturer and Postdoctoral Fellow October 2021 – present

Université libre de Bruxelles (ULB), Brussels, Belgium  
Contact: Prof. Pascal Kockaert, [pascal.kockaert@ulb.be](mailto:pascal.kockaert@ulb.be)

Working on an independent project on structured ultrafast light and its applications in particle acceleration, laser processing, integrated photonics, and coherent control in chemistry. IF@ULB fellow until September 2023 and FNRS *chargé de recherche* until September 2024. FNRS *collaborateur scientifique* starting October 2024 for one year. Since February 2025, teaching a course on electromagnetism at the Solvay school for economics and management.

Postdoctoral Researcher December 2020 – September 2021

Vrije Universiteit Brussel (VUB), Brussels, Belgium  
Contact: Dr. Martin Virte, [martin.virte@vub.be](mailto:martin.virte@vub.be)

Work on nonlinear laser dynamics, both fundamentally and applied to fiber-based sensing.

Paternity Leave / unemployed December 2019 – November 2020

Postdoctoral Researcher January 2018 – November 2019

CEA-Saclay, Gif-sur-Yvette, France  
Contact: Dr. Fabien Quéré, [fabien.quere@cea.fr](mailto:fabien.quere@cea.fr) / [fabien.quere@unistellar.com](mailto:fabien.quere@unistellar.com)

Worked on the measurement, control, and applications of spatio-temporal couplings in ultrafast, high-intensity laser pulses. An Enhanced Eurotalents postdoctoral fellow from January-December 2018.

### PhD Junior Researcher

August 2014 – December 2017

Universität Hamburg/CFEL/DESY, Hamburg, Germany

Contact: Dr. A. Maier, [andreas.maier@desy.de](mailto:andreas.maier@desy.de) / Prof. F. Kärtner, [franz.kaertner@cfel.de](mailto:franz.kaertner@cfel.de)

I worked as a researcher in the Uni. Hamburg accelerator physics group at DESY/CFEL (seconded from ELI - Beamlines). We used the ANGUS laser system to study and optimize an LWFA seeded undulator to produce stable and tunable X-rays (the LUX beamline). I worked with members of the F.X. Kärtner group on high energy narrowband terahertz pulses using periodically-poled lithium niobate (PPLN).

### Graduate Research Assistant

June 2012 – May 2014

Department of Physics, University of Texas at Austin, Austin, TX

Contact: Prof. Mike Downer, [downer@physics.utexas.edu](mailto:downer@physics.utexas.edu)

As a junior level researcher, I assisted a more senior student on experiments related to Laser Wakefield Acceleration, especially two-beam interaction experiments on the UT<sup>3</sup> laser system.

### Undergraduate Research Assistant

May 2010 – May 2012

Center for Ultrafast Optical Science (CUOS), University of Michigan, Ann Arbor, MI

Contact: Asst. Prof. Alec Thomas, [agrt@umich.edu](mailto:agrt@umich.edu)

I was responsible for development and interferometric characterization of gas targets for High-Intensity Laser-plasma interactions on the HERCULES laser.

### National Undergraduate Fellowship (NUF) Intern

June 2011 – Aug. 2011

General Atomics, Fusion Energy Division, San Diego, CA, USA

Princeton Plasma Physics Laboratory-led internship program. I did computational studies of the lithium ion beam accelerator responsible for edge plasma measurements on the DIII-D tokamak.

## **Teaching Experience:**

### Teaching Assistant

Sept. 2024 – present

École Polytechnique de Bruxelles, Université libre de Bruxelles (ULB), Brussels, Belgium

Leading exercise sessions for the course of optical microscopy (BIME-H407).

### Engineering Project Tutor

Sept. 2023 – present

École Polytechnique de Bruxelles, Université libre de Bruxelles (ULB), Brussels, Belgium

Tutoring a group of students (BA2 project, TRAN-H201) as they learn technical project management skills to build an engineering prototype (solar-tracking photovoltaic cell, Geiger counter, etc.).

### Teaching Assistant

Sept. 2012 – May 2014

Department of Physics, University of Texas at Austin, Austin, TX, USA

Assistant (TA) for the junior level Modern Physics Laboratory. This included laboratory assistance, equipment repair, technical writing advice, and grading lab reports. Responsible for ~15 students.

### Mathematics Grader

Sept. 2009 – April 2011

Mathematics Department, University of Michigan, Ann Arbor, MI, USA

Responsible for grading and recording grades for undergraduate math courses up to junior level ordinary differential equations. At peak I was grading the weekly homework sets of more than 60 students.

## **Supervision Experience:**

### PhD supervision:

Robbe de Mey (VUB, 2024), Martin Skönderas (VUB, 2023)

### Masters' supervision:

Julien Dechanxhe (ULB, 2024), Mennatallah Kandil (VUB, 2021)

### External evaluator:

Emily Archer PhD viva (Oxford, 2024)

**Peer-Reviewed Publications:**

(h-index = 15, google scholar; 13, Web of Science)  
(total citations = 1136, google scholar; 505, Web of Science)

Total pubs. = 39  
Sole author = 5  
First author = 15  
Second author = 12  
Last author = 4

**Key to Roles:** A = primary author, B = essential author, C = peripheral author

Article Information	Citations (google-scholar)	Citations (Web of Know.)	Role
<i>Space-time couplings in ultrashort lasers with arbitrary nonparaxial focusing</i> , <b>S. W. Jolly</b> , Marianna Lytova , Simon Vallières , François Légaré , Steve MacLean and François Fillion-Gourdeau, <i>Nanophotonics</i> <b>XX</b> , XXX (2025).	-	-	A
<i>Influence of feedback phase on time delay signature and chaos bandwidth in a laser subject to dual optical feedback</i> , R. de Mey, <b>S. W. Jolly</b> , & M. Virte, <i>Optics &amp; Laser Technology</i> <b>184</b> , 112342 (2025).	-	-	B
<i>Relativistic Electrons from Vacuum Laser Acceleration Using Tightly Focused Radially Polarized Beams</i> , J. Powell, <b>S. W. Jolly</b> , S. Vallières, F. Fillion-Gourdeau, S. Payeur, S. Fourmaux, M. Lytova, M. Piché, H. Ibrahim, S. MacLean, & François Légaré, <i>Physical Review Letters</i> <b>133</b> , 155001 (2024).	-	-	A
<i>Space-time characterization of ultrashort laser pulses: A perspective</i> , B. Alonso, A. Döpp, & <b>S. W. Jolly</b> , <i>APL Photonics</i> <b>9</b> , 070901 (2024).	-	-	A
<i>Modeling the focusing of a radially polarized laser beam with an initially flat-top intensity profile</i> , <b>S. W. Jolly</b> , <i>Journal of the Optical Society of America A</i> <b>41</b> , 1390–1396 (2024).	-	-	A
<i>Clarifying the impact of dual optical feedback on semiconductor lasers through analysis of the effective feedback phase</i> , R. de Mey, <b>S. W. Jolly</b> , and M. Virte, <i>Chaos</i> <b>34</b> , 043142 (2024).	3	-	B
<i>Impact of feedback time-distribution on laser dynamics</i> , M. Skënderas, <b>S. W. Jolly</b> , & M. Virte, <i>Physical Review Research</i> <b>6</b> , 023025 (2024).	-	-	B
<i>Procedure for imparting transverse orbital angular momentum by focusing spatiotemporally coupled ultrashort pulses</i> , M. A. Porras & <b>S. W. Jolly</b> , <i>Physical Review A</i> <b>109</b> , 033514 (2024).	2	-	B
<i>Vortex plate retarder-based approach for the generation of sub-20 fs light pulses carrying orbital angular momentum</i> , T. Tapani, H. Lin, A. De Andres, <b>S. W. Jolly</b> , H. Bhuvanendran, & N. Maccaferri, <i>Journal of Optics</i> <b>26</b> , 045502 (2024).	1	1	C
<i>Analytical fields of ultrashort radially polarized laser beams with spatial chirp</i> , <b>S. W. Jolly</b> & M. A. Porras, <i>Journal of the Optical Society of America B</i> <b>41</b> , 577–584 (2024).	1	1	A
<i>Numerical investigation of terahertz wave driven electron acceleration generated from gas jet</i> , Sz. Turnár, B. Sarkadi, <b>S. W. Jolly</b> , J. Hebling, & Z. Tibai, <i>Applied Physics B</i> <b>130</b> , 24 (2024).	-	-	C
<i>Control of vortex orientation of ultrashort optical pulses using spatial chirp</i> , M. A. Porras & <b>S. W. Jolly</b> , <i>Optics Letters</i> <b>48</b> , 6448 (2023).	8	5	A

<i>Modulated super-Gaussian laser pulse to populate a dark rovibrational state of acetylene</i> , A. Aerts, <b>S. W. Jolly</b> , P. Kockaert, S.-P. Gorza, J. Vander Aurewa, & N. Vaeck, J. Chem. Phys. <b>159</b> , 084303 (2023).	1	1	B
<i>Performance and control strategy of an integrated tunable laser with a single intra-cavity AMZI filter</i> , M. Skänderas, P. Marin-Palomo, <b>S. W. Jolly</b> , & M. Virte, IEEE Photonics Journal <b>15</b> , 1–7 (2023).	-	-	C
<i>Roadmap on spatiotemporal light fields</i> , Y. Shen et al. (42 authors), Journal of Optics <b>25</b> , 093001 (2023).	78	40	C
<i>Coupling to multi-mode waveguides with space-time shaped free-space pulses</i> , <b>S. W. Jolly</b> and P. Kockaert, Journal of Optics <b>25</b> , 054002 (2023).	4	2	A
<i>Spatio-spectral couplings in optical parametric amplifiers</i> , A. De Andres, <b>S. W. Jolly</b> , P. Fischer, A. A. Muschet, F. Schnur, and L. Veisz, Optics Express <b>31</b> , 12036–12048 (2023).	2	2	B
<i>Ultrashort laser pulses with chromatic astigmatism</i> , <b>S. W. Jolly</b> , Optics Express <b>31</b> , 10237–10248 (2023).	2	2	A
<i>Chaotic time-delay signature suppression in lasers using phase-controlled dual optical feedback</i> , R. de Mey, <b>S. W. Jolly</b> , A. Locquet, and M. Virte, Optics Continuum <b>1</b> , 2127–2134 (2022).	6	5	B
<i>Spatiotemporal modeling of direct acceleration with high-field terahertz pulses</i> , Z. Tibai, S. Turnár, G. Tóth, J. Hebling, and <b>S. W. Jolly</b> , Optics Express <b>30</b> , 32861–32870 (2022).	3	3	A
<i>Clarification for the fields of different radially polarized Laguerre–Gaussian light beams</i> , <b>S. W. Jolly</b> and M. A. Porras, Optics Letters <b>47</b> , 3632–3635 (2022).	9	3	A
<i>Impact of FBG feedback phase on laser dynamics</i> , M. Skänderas, <b>S. W. Jolly</b> et al., Optics Letters, <b>47</b> 1602–1605 (2022).	4	2	B
<i>Survey of Spatio-Temporal Couplings throughout High-Power Ultrashort Lasers</i> , A. Jeandet, <b>S. W. Jolly</b> et al., Optics Express <b>30</b> , 3262–3288 (2022).	41	31	B
<i>Spatio-spectral characterization of ultrashort laser pulses with a birefringent delay line</i> , <b>S. W. Jolly</b> , O. Gobert, & F. Quéré, OSA Continuum <b>4</b> , 2044–2051 (2021).	9	7	A
<i>Focused fields of ultrashort radially-polarized laser pulses having low-order spatio-temporal couplings</i> , <b>S. W. Jolly</b> , Physical Review A <b>103</b> , 033512 (2021).	11	6	A
<i>Spatio-temporal characterization of ultrashort laser beams: a tutorial</i> , <b>S. W. Jolly</b> , O. Gobert, & F. Quéré, Journal of Optics <b>22</b> , 103501 (2020).	89	62	A
<i>Decoding sources of energy variability in a laser-plasma accelerator</i> , A. R. Maier, N. M. Delbos, T. Eichner, L. Hübner, S. Jalas, L. Jappe, <b>S. W. Jolly</b> , M. Kirchen, V. Leroux, P. Messner, M. Schnepf, M. Trunk, P. A. Walker, C. Werle, & P. Winkler, Physical Review X <b>10</b> , 031039 (2020).	165	99	C
<i>On the importance of frequency-dependent beam parameters for vacuum acceleration with few-cycle radially-polarized laser beams</i> , <b>S. W. Jolly</b> , Optics Letters <b>45</b> , 3865–3868 (2020).	29	17	A
<i>Multipass cells: 1D numerical model and investigation of spatio-spectral couplings at high nonlinearity</i> , N. Daher, F. Guichard, <b>S. W. Jolly</b> , X. Délen, F. Quéré, M. Hanna, & P. Georges, Journal of the Optical Society of America B <b>37</b> , 993–999 (2020).	31	22	C

<i>Controlling the velocity of a femtosecond laser pulse using refractive lenses</i> , <b>S. W. Jolly</b> , O. Gobert, A. Jeandet, & F. Quéré, <i>Optics Express</i> <b>28</b> , 4888-4897 (2020).	53	39	A
<i>On the effect of third-order dispersion on phase-matched terahertz generation via interfering chirped pulses</i> , <b>S. W. Jolly</b> , F. Ahr, K. Ravi, N. H. Matlis, F. X. Kärtner, & A. R. Maier, <i>Optics Express</i> <b>27</b> , 34769-34787 (2019).	7	4	A
<i>Spatio-temporal structure of a Petawatt femtosecond laser beam</i> , A. Jeandet, A. Borot, K. Nakamura, <b>S. W. Jolly</b> , A. J. Gonsalves, C. Tóth, H.-S. Mao, W. P. Leemans, & F. Quéré, <i>Journal of Physics: Photonics</i> <b>1</b> , 035001 (2019).	54	41	B
<i>Spectral Phase Control of Interfering Chirped Pulses for High-Energy Narrowband Terahertz Generation</i> , <b>S. W. Jolly</b> , N. H. Matlis, F. Ahr, V. Leroux, T. Eichner, A.-L. Calendron, H. Ishizuki, T. Taira, F. X. Kärtner, & A. R. Maier, <i>Nature Communications</i> <b>10</b> , 2591 (2019).	138	88	A
<i>Influence of longitudinal chromatism on vacuum acceleration by intense radially polarized laser beams</i> , <b>S. W. Jolly</b> , <i>Optics Letters</i> <b>44</b> , 1833-1836 (2019).	27	16	A
<i>Lux: A laser-plasma driven undulator beamline</i> , N. Delbos, C. Werle, I. Dornmair, T. Eichner, L. Hübner, S. Jalas, <b>S. W. Jolly</b> , M. Kirchen, V. Leroux, P. Messner, M. Schnepp, M. Trunk, P. A. Walker, P. Winkler, & A. R. Maier, <i>Nuclear Inst. and Methods in Physics Research</i> , A <b>909</b> , 318-322 (2018).	60	22	C
<i>Acceleration of electrons in THz driven structures for AXSIS</i> , N. H. Matlis, F. Ahr, A.-L. Calendron, H. Cankaya, G. Cirmi, T. Eichner, A. Fallahi, M. Fakhari, M. Hemmer, A. Hartin, H. Ishizuki, <b>S. W. Jolly</b> , V. Leroux, A. R. Maier, J. Meier, W. Qiao, K. Ravi, D. N. Schimpf, T. Taira, X. Wu, L. Zapata, C. Zapata, D. Zhang, C. Zhou, & F. X. Kärtner, <i>Nuclear Inst. and Methods in Physics Research</i> , A <b>909</b> , 27-32 (2018).	22	8	C
<i>Wavefront Degradation of a 200 TW Laser from Heat-Induced Deformation of In-Vacuum Compressor Gratings</i> , V. Leroux, <b>S. W. Jolly</b> , M. Schnepp, T. Eichner, S. Jalas, M. Kirchen, P. Messner, C. Werle, P. Winkler, & A. R. Maier, <i>Optics Express</i> <b>26</b> , 13061-13071 (2018).	40	21	B
<i>Narrowband terahertz generation with chirped-and-delayed laser pulses in periodically poled lithium niobate</i> , F. Ahr, <b>S. W. Jolly</b> , N. H. Matlis, S. Carbajo, T. Kroh, K. Ravi, D. N. Schimpf, J. Schulte, H. Ishizuki, T. Taira, A. R. Maier, & F. X. Kärtner, <i>Optics Letters</i> <b>42</b> , 2118-2121 (2017).	86	62	A

#### Invited Perspectives, Editorials, and Comments:

*Ultrashort coils of light*, S. W. Jolly, *Nature Photonics* **17**, 743 (2023).

*Space-time optics with ultrashort laser beams*, S. W. Jolly, *Belgian Journal of Physics* **1**(4), 18 (2022).

*Hyperspectral imaging and pulse characterization*, S. W. Jolly, *Light: Science & App.* **11**, 267 (2022).

#### Invited Conference/Workshop/Seminar Participation:

Optica incubator on spatiotemporal structuring of light – Washington, DC USA, Nov 13-15, 2024

Invited talk: The applications of space-time light

bePOM (Belgian online photonics meetup) – Brussels, Belgium, Sep 19-20, 2024

Invited talk: The space-time nature of ultrashort laser pulses

Erasmus Mundus Lascala Master, Winter School – Orsay, France, Feb 20<sup>th</sup>, 2024

Invited talk: Space-time effects and their characterization in ultrashort pulses  
(and a real-time coding exercise for the students)

CNRS Réseau FEMTO journées de caractérisation – Paris, France, Nov 10<sup>th</sup>, 2023  
 Invited talk: *Advances in spatio-temporal pulse characterization*

2023 CLEO – San Jose, CA USA  
 Invited Talk no. 1: *Bridging free-space and guided-wave space-time optics*  
 Invited Talk no. 2: *Vector-vortex beams with spatio-temporal couplings*

2023 Ultrafast Optics – Bariloche, Argentina, March 27<sup>th</sup>, 2023  
 Invited Talk: *Advances in spatio-temporal pulse characterization*

2023 STAMPLASS – ELI-NP, Magurele, Romania, March 21<sup>st</sup>, 2023 (remote)  
 Invited Talk: *Space-time metrology of high-power laser pulses: Why? and How?*

Oxford University Atomic & Laser physics seminar / LPA seminar series, Oct 11<sup>th</sup>, 2021  
 Invited Seminar: *Spatio-Temporal Characterization: Reaching the Limits of Understanding Ultrashort Laser Pulses*

2019 LightConference – Changchun, China  
 Invited Talk: *Spectral Phase Tuning for High Energy Narrowband THz Pulses*

2019 CLEO – San Jose, CA USA  
 Invited Talk: *Controlling the velocity of ultrashort laser bursts in vacuum*

### Contributed Conference/Workshop/Seminar Participation:

2024 SPIE Photonics Europe Conference – Strasbourg, France, Apr. 8-12, 2024  
 Talk: *Spatio-temporal initial conditions for multi-mode nonlinear optics*

2024 OSA High-Brightness Congress – Vienna, Austria, Mar. 12-14, 2024  
 Talk: *Revisiting longitudinal electron acceleration with extreme focusing and ionization dynamics*

2023 Electron Beam Spectroscopy for Nanophotonics – Antwerp, Belgium, Oct. 11-13, 2023  
 Talk: *Vacuum laser acceleration with arbitrarily aberrated ultrashort vector beams*

2022 Structured Light Workshop, Nov 8<sup>th</sup>, 2022 – Jena, Germany (remote)  
 Talk: *Spatio-temporally structured light*

2022 BLIN5 workshop, Oct 13<sup>th</sup>, 2022 – Munich, Germany (remote)  
 Talk: *Spatio-temporal characterization of ultrashort laser beams with INSIGHT*

2022 CLEO – San Jose, CA USA  
 Talk: *Analysis of High-Order Spatiotemporal Couplings and Their Generation with Refractive Optics*

Imperial College London Plasma Physics seminar, Oct 12<sup>th</sup>, 2021  
 Seminar: *Electron acceleration and manipulation with high intensity vector beams and space time coupling*

2020 OSA High-Brightness Congress – Prague, Czechia (remote)  
 Talk: *Electron acceleration with high-intensity radially-polarized laser beams having spatio-temporal couplings*  
 Recording link: <https://youtu.be/j8ARoAdC4Yw>

2018 CLEO – San Jose, CA USA  
 Talk: *Towards Millijoule Narrowband Terahertz Pulses Using the Chirp-and-Delay Technique*

2018 OSA High-Brightness Congress – Strasbourg, France  
 Talk: *Towards mJ Narrowband THz Generation Using Chirp-and-Delay in Periodically Poled Lithium Niobate*

3<sup>rd</sup> European Advanced Accelerators Workshop (EAAC), September 2017 – Isola d'Elba, Italy  
 Talk: *High Energy Narrowband Terahertz Pulses Generated by Broadband Chirped Pulse Trains in Periodically Poled Lithium Niobate*

2017 CLEO – San Jose, CA USA  
 Talk: *Narrowband Terahertz Generation with Broadband Chirped Pulse Trains in Periodically Poled Lithium Niobate*

2<sup>nd</sup> ELI Scientific Challenges Meeting, October 2015 – Prague, Czech Republic  
 Poster presented: *Control and performance monitoring system of the 200 TW ANGUS laser*

2<sup>nd</sup> European Advanced Accelerators Workshop (EAAC), September 2015 – Isola d'Elba, Italy  
 Talk: *Control System for a 200 TW Laser*

2015 Deutsche Physikalische Gesellschaft Spring Meeting – Wuppertal, Germany  
 Talk: *Diagnostics for Stable Operation of a 200 TW Laser System*

## Honors and Awards:

### ULB

Third place in the 2021 Belgian Physical Society Young Speaker Contest

### CEA-Saclay

Awarded the Enhanced Eurotalents Postdoctoral Fellowship for the duration of 2018 to work on "Spatio-temporal metrology and control of high-power femtosecond laser pulses"

### Universität Hamburg

Awarded a PIER Seed Grant in 2017 of value 49,700 EUR for "Highly Efficient generation of Narrowband THz Pulses"

### University of Texas

Recipient of the F.A. Matsen Graduate Fellowship in Physics for the 2012-2013 full academic year.

### University of Michigan

Dean's List and University Honors in Fall 2007, Winter 2008, Fall 2008, Summer 2009, Winter 2010, Fall 2010, and Winter 2011 semesters

## Scientific Community Participation:

Board member for the *Belgian Physical Society* (BPS) focusing on communication (2023 – present)

Young Editor for the journal *Ultrafast Science* (2022 – present)

I have been a reviewer for 60 total papers, for the following journals (with number of reviews):

Optics Express (16), Optics Letters (10), Physical Review A (4), Physical Review Letters (3), Journal of the Optical Society of America B (3), Laser & Photonics Reviews (2), Applied Optics (2), Nature Communications (2), Nature Photonics (1), Optica (1), Light: Science & Applications (1), Photonics Research (1), Applied Physics Letters (1), ACS Photonics (1), APL Photonics (1), Physical Review E (1), Journal of Optics (1), Review of Scientific Instruments (1), Communications Physics (1), Applied Physics B (1), Journal of Lightwave Technology (1), Optics and Laser Technology (1), Optical Materials Express (1), High Power Laser Science and Engineering (1), The European Physical Journal D (1), Journal of the European Optical Society (1)

I was a reviewer of applications to the OSA Siegman School (2019)

## Practical Skills:

### Experimental Research

- Experience writing and editing scientific papers for peer-reviewed journal submission
- Knowledge of numerous optical and scientific equipment. This includes but is not limited to CCD cameras, fiber optics, timing systems, autocorrelation pulse width measurements, relay imaging, laser delay lines, energy attenuators, adaptive optics, interferometry, etc.
- Extensive experience with KF- and CF-based UHV systems and laser transport beamlines
- Detailed and expert-level experience with femtosecond lasers and high-intensity laser amplification chains, including: Mode-locked lasers, regenerative amplifiers, cross-polarized wave generation, multi-pass amplifiers, Nd:YLF and Nd:YAG nanosecond level pump lasers, grating-based pulse compression, chirped mirrors, hollow-core-fiber compression, etc.
- Experience with Terahertz generation and detection in air plasmas and nonlinear crystals (lithium niobate, PPLN)

### Management

- Experience with various aspects of lab organization, including scheduling, organization of the lab itself, management of resources, and coordinating multiple threads of research
- Communicated with various technical groups within the DESY or CEA-Saclay infrastructure
- Experience collaborating with other scientists and groups

### Numerical and Computational tools

- Very experienced with Python and MATLAB languages/software for various applications
- Experience using git and github for open-source codes and coding project management

- Sole contributor to open-source repositories
- Contributor to larger collaborative open-source tools
- Varying Knowledge in programming with C++, Java, Julia, PHP, Javascript, MYSQL, and HTML programming languages; some experience with Zemax for optical design.
- Experienced with Mathematica, LabView, LateX, Adobe Illustrator, GIMP, and all Microsoft Office and Open Office applications
- Hands-on experience with control systems software (DOOCS and TINE at DESY) and the specifics of various details regarding Linux server installation and management.

#### Machining

- Experience using drill presses, mills, lathes, and saws to machine scientific equipment
- Experience designing parts and communicating with technicians who manufacture them

#### Languages

- Early intermediate knowledge of the French language: Approximately B1 level. Used for daily life and also teaching and supervision at ULB.
- Intermediate knowledge of the German Language: Approximately B1 level proficiency through self-study during my PhD period.
- Early beginner knowledge of the Croatian language: Approximately A1 level.
- Some past experience with the Japanese Language; three semesters taken at University of Michigan from 2007-2009

### Service and Volunteer Work:

#### Volunteer

January 2013 – June 2013

Texas School for the Blind and Visually Impaired, Austin, TX

Contact: Gloria Bennett, [bennettg@tsbvi.edu](mailto:bennettg@tsbvi.edu)

Volunteers in general provide multiple services of varying difficulty to help young students with vision impairments both with academics and with practical tasks. I worked as a pre-calculus tutor to a very talented student.

### Continuing Education:

Light Emitting Diodes and Semiconductor Lasers (Univ. of Colorado / Coursera, January 2021)  
 Semiconductor Physics (Univ. of Colorado / Coursera, December 2020)  
 Neural Networks and Deep Learning (deeplearning.ai / Coursera, April 2020)  
 Applied Machine Learning in Python (Univ. of Michigan / Coursera, Feb 2019)  
 Applied Plotting, Charting & Data Representation in Python (Univ. of Michigan / Coursera, Jan 2019)  
 Introduction to Data Science in Python (Univ. of Michigan / Coursera, Nov 2018)  
 Attosecond Optics Short Course (given by Z. Chang at CLEO in San Jose, CA USA, May 2017)  
 Ultrafast X-ray Summer School (UXSS) (Hamburg, Germany, 2015)  
 ELI Summer School (ELISS) (Prague, Czech Republic, August 2014)  
 Princeton Plasma Physics Summer School (PPPL – Princeton, NJ USA, June 2011)

### Extracurricular Activities:

Player for the Hamburg Hardfisch, the Hamburg area elite men's ultimate frisbee team, from 2015-2018. Placed 5<sup>th</sup> in Germany in 2015, 7<sup>th</sup> in 2016, and 6<sup>th</sup> in 2017.

Player, elected leadership member, and club sports president for the University of Michigan men's ultimate frisbee club team up until May 2012. Our team placed in the top eight in the nation in 2010, and 15<sup>th</sup> in 2012. We traveled to competitive tournaments all over the US.