

# Gamze Gül

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[Personal Website](#) | [Linkedin](#) | [Google Scholar](#)

## Education

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**Northwestern University**, PhD in Applied Physics Sep 2019 – Dec 2025  
Evanston, IL, USA

- GPA: 3.84/4.00
- Advisor: Prof. Prem Kumar
- Thesis: Quantum Wrapper Networking for Polarization Entangled Photon Pairs: Noise Investigation and Active Polarization Control

**Koç University**, M.S. in Physics Sep 2017 – Aug 2019  
Istanbul, Türkiye

- GPA: 3.76/4.00
- Advisor: Prof. Alper Kiraz & Coadvisor: Prof. Ataç İmamoğlu
- Thesis: Fluorescence Based Detection of Magnetic Field Effect on Photolyases and Flavin Containing Solutions

**Bilkent University**, B.S. in Electrical and Electronics Engineering Sep 2012 – Jun 2017  
Ankara, Türkiye

- GPA: 3.50/4.00
- Minor in Physics. GPA: 3.96/4.00.

## Research Experience

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**Postdoctoral researcher**, Northwestern University – Evanston, IL, USA Dec 2025 - Present

- Expanded quantum wrapper networking testbed
- Mentored to PhD, MS and BS students

**Doctoral Candidate**, Northwestern University – Evanston, IL, USA Sep 2019 – Dec 2025

- Designed quantum wrapper networking solutions for O-band polarization entangled photons.
- Built an active polarization compensation setup for polarization-entangled photon pairs.
- Theoretically investigated noise in quantum wrapper networking systems.
- Built experimental setup to prepare and measure quantum states while generating classical bits with an FPGA for networking operations.
- Built an light coupling setup for TFLN waveguides to study their nonlinear properties.
- Modeled the light propagation in TFLN waveguides for the wavelength far from the SHG phase matching bandwidth.

**Graduate Research Assistant**, Koç University – Istanbul, Türkiye Sep 2017 – Aug 2019

- Quantum coherence in radical pair mechanism

**Intern**, Aselsan – Ankara, Türkiye July 2016 – Aug 2016

- Designed and simulated microstrip low-pass filters at radio frequencies for satellite applications.
- Tested the fabricated filter in frequency and time domains.

**Intern**, Advance Research Laboratory – Ankara, Türkiye Jul 2015 – Aug 2015

- Built the experimental setup for pulse compression with spatial light modulators for ultrafast fiber lasers.

## Journal Publications

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1. **G Gül**, J van Howe, SG Tan, MB On, R Proietti, GS Kanter, SJB Yoo, P Kumar. "Active Polarization Tracking and Control using Classical Headers in Quantum Wrapper Networks". (Manuscript in preparation)
2. **G Gül**, GS Kanter, SG Tan, MB On, R Proietti, SJB Yoo, P Kumar. "Noise Impact of Classical Headers on the Quantum Payload in Quantum Wrapper Networking", *Optica Quantum*, vol. 3, pp. 303-311, Jun. 2025.
3. KF Lee, **G Gül**, Z Jim, P Kumar. "Fiber loop quantum buffer for photonic qubits", *New J. Phys*, vol. 26, no. 8, Aug. 2024.
4. MB On, R Proietti, **G Gül**, GS Kanter, SK Singh, P Kumar, SJB Yoo. "Experimental Demonstration of Datagram Switching With Monitoring in Quantum Wrapper Networks", *Journal of Lightwave Technology*, vol. 42, no. 10, pp. 3504-3514, May, 2024.
5. SJB Yoo, SK Singh, MB On, **G Gül**, GS Kanter, R Proietti, P Kumar. "Quantum Wrapper Networking", *IEEE Communications Magazine*, vol. 62, no. 3, pp. 76-81, Mar. 2024.

## Refereed Conference Publications

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1. J van Howe, **G Gül**, GS Kanter, P Kumar. "Polarization Mode Dispersion Mitigation using Dual-Wavelength Headers in Quantum Wrapper Networks", *Frontiers in Optics, Laser Science (FiO+LS)*, Denver, Colorado, USA, Oct. 2025.
2. **G Gül**, J van Howe, SG Tan, MB On, R Proietti, GS Kanter, SJB Yoo, P Kumar. "Active Polarization Control using Classical Headers in Quantum Wrapper Networks", *Quantum 2.0*, San Francisco, California USA, Jun. 2025.
3. MB On, R Proietti, **G Gül**, GS Kanter, P Kumar, SJB Yoo. "Rerouting in Quantum Wrapper Networks by Monitoring Single-Photon Level Noise" *2025 Optical Fiber Communications Conference and Exhibition (OFC)*, San Francisco, California, USA, Mar. 2025.
4. **G Gül**, MB On, SG Tan, R Proietti, GS Kanter, SJB Yoo, P Kumar. "Quantum Wrapper Networking: Investigating the Noise Impact of Classical Headers on the Quantum Payload", *Frontiers in Optics, Laser Science (FiO+LS)*, Denver, Colorado, USA, Oct. 2024.
5. MB On, R Proietti, **G Gül**, GS Kanter, SK Singh, P Kumar, SJB Yoo. "Entanglement Distribution in Packet-Switched Quantum Wrapper Network" *2024 Conference on Lasers and Electro-Optics (CLEO)*, Charlotte, North Carolina, USA, May 2024.
6. **G Gül**, MB On, SK Singh, R Proietti, GS Kanter, SJB Yoo, P Kumar. "Designing Classical Header Bits for Quantum Wrapper Networking with O-band Quantum Signal", *Frontiers in Optics, Laser Science (FiO+LS)*, Tacoma, Washington, USA, Oct. 2023.
7. MB On, SK Singh, **G Gül**, GS Kanter, R Proietti, P Kumar, SJB Yoo. "Experimental demonstration of optical packet switching in quantum wrapper networks" *49th European Conference on Optical Communications (ECOC 2023)*, Glasgow, Scotland, Oct. 2023.
8. MB On, SK Singh, **G Gül**, GS Kanter, R Proietti, P Kumar, SJB Yoo. "Demonstration of quantum channel monitoring via quantum wrappers" *2023 Optical Fiber Communications Conference and Exhibition (OFC)*, San Diego, California, USA, Mar. 2023.
9. **G Gül**, K Abdelsalam, S Fathpour, KF Lee, GS Kanter, P Kumar. "Effect of Periodic Poling on Self-phase Modulation in Thin-film Lithium Niobate Waveguides", *Frontiers in Optics, Laser Science (FiO+LS)*, Rochester, New York, USA, Oct. 2022.
10. **G Gül**, K Abdelsalam, S Fathpour, KF Lee, GS Kanter, P Kumar. "Self-phase modulation in periodically-poled thin-film lithium niobate waveguides", *10th EPS-QEOD Europhoton Conference on Solid-State, Fibre, and Waveguide Coherent Light Sources (EUROPHOTON 2022)*, Hanover, Germany, Sep. 2022.
11. M Gori, **G Gül**, P Kumar, P Kurian. "Theory of four-wave mixing for biomolecular systems: toward transduction of quantum information from fluorescent protein complexes to photonic readouts", *APS March Meeting Abstracts*, Mar. 2021.
12. HC Baykara\*, E Bıyık\*, **G Gül**\*, D Onural\*, AS Öztürk\*, İ Yıldız\* (\*equal contribution). "Real-Time Detection, Tracking and Classification of Multiple Moving Objects in UAV Videos", *29th IEEE International Conference on Tools with Artificial Intelligence (ICTAI)*, Boston, Massachusetts, USA, Nov. 2017.

## Presentations

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### Active Polarization Control using Classical Headers in Quantum Wrapper Networks

- Quantum 2.0, San Francisco, California, 2025 (Poster)

### Rerouting in Quantum Wrapper Networks by Monitoring Single-Photon Level Noise

- Optical Fiber Communication Conference (OFC), San Francisco, California, 2025

### Quantum Wrapper Networking: Investigating the Noise Impact of Classical Headers on the Quantum Payload

- Frontiers in Optics and Laser Science (FiO+LS), Denver, Colorado, 2024

### Designing Classical Header Bits for Quantum Wrapper Networking with O-band Quantum Signal

- The Quantum Economic Development Consortium (QED-C) Annual Meeting, Evanston, Illinois, 2023 (Poster)
- Frontiers in Optics and Laser Science (FiO+LS), Tacoma, Washington, 2023 (Poster)

### Effect of Periodic Poling on Self-phase Modulation in Thin-film Lithium Niobate Waveguides

- Frontier in Optics and Laser Science (FiO+LS), Rochester, New York, 2022
- Europhoton, Hannover, Germany, 2022 (Poster)

### Fluorescence-Based Detection of Magnetic Field Effect on Photolyases and Flavin-Containing Solutions

- The International OSA Network of Students Conference (IONS), Barcelona, Spain, 2019 (Poster)

## Teaching Experience

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**Northwestern University**, Teaching Assistant

2020-2021

- GEN ENG 201 - General Engineering 1
- EE 221 - Fundamentals of Circuits,
- EE 202 - Introduction to Electrical Engineering

Conducted problem solving sessions for a class of 20, led in lab sessions for circuit building and Matlab simulations, graded lab reports and homework assignments.

**Koç University**, Teaching Assistant

2017-2019

- Phys 101 - General Physics
- Phys 122 - Physics for Health Sciences

Conducted problem solving sessions for a class of 60, led in lab sessions for general physics experiments, graded lab reports and quizzes.

## Honors and Awards

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**Corning Women in Optical Communications Scholarship** Awarded one of three merit-based US\$3,000 prize recognizing outstanding women studying optical communications and networking 2025

**Optica Student Leadership Experience**, Selected as one of 100 student leaders worldwide to attend to leadership training program 2022

**Northwestern University ECE Department Best Teaching Assistant Award**, Awarded based on student nominations 2021

**Northwestern University Applied Physics PhD Program Scholarship**, Monthly stipend, paid health insurance and a full tuition scholarship 2019

**Koç University Outstanding Teaching Award**, Research grant for excellence and dedication in the teaching responsibilities 2018

**Koç University Comprehensive Scholarship**, Full tuition waiver and stipend during M.S program 2017

**Bilkent University High Honor Degree** 2017

**Turkish Education Foundation (TEV) Outstanding Success Scholarship**, Monthly stipend during B.S program 2012

**Bilkent University Comprehensive Scholarship**, Full tuition waiver and stipend during B.S program 2012

## Outreach, Mentoring and Professional Service

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<b>IEEE Quantum Week</b>	2025
Reviewer. Reviewed papers for the Quantum Networking and Communications track.	
<b>Turkish Education Foundation(TEV) Mentorink Program Mentor</b>	2022-2025
Mentor. Helped two female students for their preparation for an academic life.	
<b>Northwestern University McCormick Graduate Teaching Committee</b>	2022-2024
Helped graduate students with their teaching experiences.	
<b>Northwestern Applied Physics Graduate Program Student Council</b>	2021-2023
Represented graduate student body in the program, organized events to help students with their academic skills and improve the community.	
<b>Northwestern University Applied Physics Graduate Program DEI Committee</b>	2022-2024
Supported fellow students with different backgrounds. Improved the mentorship program for first-year students.	
<b>Optica Student Chapter Vice President.</b>	2019-2025

## Technical Skills

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**Programming Languages:** Python, Verilog, VHDL, C, C++

**Technical Softwares** MATLAB, LTSpice, PSpice, MPLab X IDE, Eagle, DipTrace

## Professional Memberships

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<b>Optica</b> , Early Career Member	2025-Present
<b>Optica</b> , Student Member	2015-2025
<b>IEEE</b> , Student Member	2022-2025
<b>EPS</b> , Student Member	2022-2025