

Omar A. Ashour

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Education

UC Berkeley

PhD, Applied Physics

- **Advisor:** Professor Xiang Zhang

Berkeley, CA

May 2022

Texas A&M University

B.S., Electrical Engineering, Summa Cum Laude, GPA: 4.0/4.0

- **Thesis:** Maximal Intensity Higher-Order Breathers of Nonlinear Schrödinger Equations on Different Backgrounds.
- **Advisors:** Professors Siu Chin and Milivoj Belić.
- **Capstone:** Wireless Power Transfer for Electric Vehicle Charging.
- **Track:** Device Science and Optics.
- **Minors:** Mathematics, Physics.
- **Honor Societies:** HKN, TBII, ΦΚΦ.
- **Dean's Honor Roll:** 8 times.

College Station, TX

May 2017

Experience

Research

NSF Nanoscale Science and Engineering Center

Graduate Student Researcher, Advisor: Dr. Xiang Zhang

Berkeley, CA

Jan 2016 – May 2017

Texas A&M Engineering Experiment Station

Research Assistant, Supervisor: Dr. Peter Rentzepis

- Numerical and Experimental Studies of Ultrafast Dynamics in Thin Metal Films.

College Station, TX

Jan 2016 – May 2017

Physics Department, Texas A&M University

Science Program, Texas A&M University (Qatar Campus)

Research Assistant, Supervisors: Dr. Milivoj Belić, Dr. Siu Chin.

- Numerical and Analytical Studies of Breathers of the nonlinear Schrödinger equation.

College Station, TX

Doha, Qatar

Jan 2014 – May 2017

Institute of Electronic Structure and Laser (IESL-FORTH)

Research Assistant, Supervisor: Dr. Stelios Tzortzakis

- Femtosecond laser machining of waveguides in glass bulk.

Heraklion, Greece

May – July 2015

Teaching

Science Program, Texas A&M University (Qatar Campus)

Teaching Assistant, Supervisor: Dr. Milivoj Belić

- PHYS-218 (mechanics) and PHYS-208 (Electricity, magnetism and optics).

Doha, Qatar

May 2014 – Dec 2015

Qatar Robotics Institute for Development (QRID)

Junior Robotics Trainer

- Robotics, electronics and embedded programming.

Doha, Qatar

May – Nov 2014

Journal Articles

Published

- S. Nikolić, N. Aleksić, **O. Ashour**, M. R. Belić, and S. A. Chin, “Systematic generation of higher-order solitons and breathers of the Hirota equation on different backgrounds”, *Nonlinear Dynamics* **89**:1637–1649 (2017). [\[Link\]](#)
- R. Li , **O. Ashour** , J. Chen , H.E. Elsayed-Ali , P. Rentzepis, “Femtosecond laser induced structural dynamics and melting of Cu (111) single crystal: an ultrafast time-resolved x-ray diffraction study,” *Journal of Applied Physics*, **121**, 6. [\[Link\]](#)
- S. Chin, **O. Ashour**, S. Nikolić, and M. Belić, “Peak-height formula for higher-order breathers of the nonlinear Schrödinger equation on non-uniform backgrounds,”, *Phys. Rev. E.*, **95**, 012211. [\[Link\]](#)
- S. Chin, **O. Ashour**, S. Nikolić, and M. Belić, “Maximal intensity higher-order Akhmediev breathers of the nonlinear Schrödinger equation and their systematic generation”, *Phys. Let. A* **380**, 43 (2016). [\[Link\]](#)
- S. Chin, **O. Ashour**, and M. Belić, “Anatomy of the Akhmediev breather: cascading instability, first formation time and Fermi-Pasta-Ulam recurrence,” *Phys. Rev. E* **92**, 063202 (2015). [\[Link\]](#)

In Progress

- **O. Ashour**, “Schrödinger’s Lab: a numerical suite for the nonlinear Schrödinger equation,” (preparing for submission to *Computer Physics Communications*).
- **O. Ashour**, S. Chin, S. Nikolić, M. Belić, “Maximal Intensity Higher Order Breathers of the Nonlinear Schrodinger Equation on Elliptic Background,” (preparing for submission).
- **O. Ashour**, S. Chin, S. Nikolić, M. Belić, “Systematic Generation of Nonlinear Talbot Carpets of Breathers” (preparing for submission).

Conference Presentations

Presentations

- **O. Ashour**, R. Li, P. Rentzepis, “Monitoring femtosecond laser induced melting and recrystallization of Cu (111) single crystal by sub-picosecond X-ray pulses,” presented at ICTP TMB 2017, Aug 15-19 2017, Trieste, Italy
- M. Belić; S. Nikolic, **O. Ashour**, Y.Q. Zhang, “Rogue Waves and Talbot Carpets,” presented at the APS March Meeting, March 13-17 2017, New Orleans, LA.

Papers

- **O. Ashour**, B. Aleksić, N. Aleksić, and M. Belić, “Comparison of Highly Efficient Multidimensional Algorithms for Solving Nonlinear Schrodinger Equation,” presented at the first International Computational Science and Engineering Conference, May 11-12 2015, Doha, Qatar.

Posters

- S. Nikolić, N. Aleksić, **O. Ashour**, M. Belić, S. Chin, “Analytical and dynamical generation of higher-order solitons and breathers of the extended nonlinear Schrödinger equation on different backgrounds,” presented at Photonica 2017, Aug 28 - Sept 1 2017, Belgrade, Serbia.
- **O. Ashour**, S. Chin, and M. Belić, “Anatomy of the Akhmediev breather: cascading instability, first formation time and Fermi-Pasta-Ulam recurrence,” presented at the Photonics Middle East Conference, December 13-15 2015, Doha, Qatar.
- S. Nikolić, **O. Ashour**, S. Chin, and M. Belić, “Dynamics of Rogue Waves,” presented at the Photonics Middle East Conference, December 13-15 2015, Doha, Qatar.
- **O. Ashour**, B. Aleksić, N. Aleksić, and M. Belić, “Comparison of Algorithms for Nonlinear PDEs on GPUs,” presented at the 4th TAMUQ Annual Research and Industry Showcase, April 23 2015, Doha, Qatar.

Honors and Awards

Berkeley Graduate Fellowship UC Berkeley	2017-2019
Cornell Graduate Fellowship (Turned down) Cornell University	2017-2018
Undergraduate Research Scholar LAUNCH, Undergraduate Research, Texas A&M University	2017
Outstanding Graduate, Class of 2017 Science Program, Texas A&M (Qatar Campus)	2017
Richard E. Ewing Award for Excellence in Student Research Texas A&M University (Qatar Campus)	2016
Takreem Award for Best Student Research Qatar Foundation for Education, Science and Community Development	2016
Gathright Scholar Award The Association of Former Students – Texas A&M University	2015, 2017
Student Employee of the Year (for TA work) Texas A&M University (Qatar Campus)	2015
Qatar Foundation Merit Scholarship Qatar Foundation for Education, Science and Community Development	2014-2017

Extracurricular Activities

IEEE TAMUQ Student Branch Technical Chair	2014 – 2015
A&M Astronomy Club President and Co-founder	2014 – 2015
Student Engineers' Council System Administration Chair	2014 – 2015
HKN, Lambda Mu Chapter Treasurer	2015 – 2015