

Omar A. Ashour

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Education

UC Berkeley

PhD, Applied Physics

Berkeley, CA

May 2022

Texas A&M University

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

College Station, TX

May 2017

- **Thesis:** Maximal Intensity Higher-Order Breathers of the Nonlinear Schrödinger Equation on Different Backgrounds.
- **Advisors:** Professors Siu Chin and Milivoj Belić.
- **Track:** Nanotechnology and Optics.
- **Minors:** Mathematics, Physics.
- **Honor Societies:** HKN, TBII, ΦΚΦ.
- **Dean's Honor Roll:** 8 times.

Experience

Research

Physics Department, Texas A&M University

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

Research Assistant, PIs: Milivoj Belić, Siu Chin.

College Station, TX

Doha, Qatar

Jan 2014 – May 2017

- Numerical and analytical studies of breathers of the nonlinear Schrödinger equation.

Texas A&M Engineering Experiment Station

Research Assistant, PI: Peter Rentzepis

College Station, TX

Jan 2016 – May 2017

- Numerical and experimental studies of ultrafast dynamics in metal thin films.

Institute of Electronic Structure and Laser (IESL-FORTH)

Research Assistant, PI: Stelios Tzortzakis

Heraklion, Greece

May – July 2015

- Femtosecond machining of complex waveguide arrays.

Teaching

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

Teaching Assistant, Supervisor: Dr. Milivoj Belić

Doha, Qatar

May 2014 – Dec 2015

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

Qatar Robotics Institute for Development (QRID)

Junior Robotics Trainer

Doha, Qatar

May – Nov 2014

- Robotics, electronics and embedded programming.

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* 1-13 (2017).
- 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.

- 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 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.....

- **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 (Declined)

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, via dual research affiliation) 2017

Richard E. Ewing Award for Excellence in Student Research

Texas A&M University 2016

Takreem Award for Best Student Research Qatar Foundation for Education, Science and Community Development	<i>2016</i>
Gathright Scholar Award The Association of Former Students – Texas A&M University	<i>2015, 2017</i>
Student Employee of the Year (for TA work) Texas A&M University (Qatar Campus)	<i>2015</i>
Qatar Foundation Merit Scholarship Qatar Foundation for Education, Science and Community Development	<i>2014-2017</i>

Extracurricular Activities

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

Community Service

- **Be A Scientist mentor:** Worked with students at King Middle School for six weeks to design and conduct experiments, foster critical thinking skills, and expose the students to scientists from diverse backgrounds.
- **DSP Note taker:** Took physics notes for disabled students.