

Omar A. Ashour

Curriculum Vitae

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Education

2019 – **Doctor of Philosophy, Physics.**

University of California, Berkeley

Advisor: Steven G. Louie

2019–2020: **Master of Arts, Physics.**

University of California, Berkeley

2017–2019: **Master of Science, Applied Science & Technology (Applied Physics).**

University of California, Berkeley (*Berkeley Graduate Fellow*)

GPA: 3.90/4.0

Thesis: The Nonlinear Schrödinger Hierarchy: from Quasi Rogue Waves to Nonlinear Talbot Carpets

2013–2017: **Bachelor of Science, Electrical Engineering (Optics).**

Texas A&M University, College Station, TX, *Summa Cum Laude*, *Undergraduate Research Scholar*

GPA: 4.0/4.0

Honor Roll: 8 Times

Honor Soc.: TBII, HKN, $\Phi K \Phi$

Thesis: Maximal Intensity Higher-Order Breathers of the Nonlinear Schrödinger Equation on Different Backgrounds

Advisors: Siu A. Chin, Milivoj R. Belić

Publications

- 2019 Stanko N. Nikolić, **Omar A. Ashour**, Najdan B. Aleksić, Yiqi Zhang, Milivoj R. Belić, and Siu A. Chin. Talbot carpets by rogue waves of extended nonlinear schrödinger equations. *Nonlinear Dynamics*, volume 97, pages 1215–1225, 2019.
- 2019 Stanko N. Nikolić, **Omar A. Ashour**, Najdan B. Aleksić, Milivoj R. Belić, and Siu A. Chin. Breathers, solitons and rogue waves of the quintic nonlinear schrödinger equation on various backgrounds. *Nonlinear Dynamics*, volume 95, pages 2855–2865, 2019.
- 2018 **Omar A. Ashour**, Siu A. Chin, Stanko N. Nikolić, and Milivoj R. Belić. Higher-order breathers as quasi-rogue waves on a periodic background. *arXiv*, page 1810.02887v1, 2018.
- 2017 Stanko N. Nikolić, Najdan B. Aleksić, **Omar A. Ashour**, Milivoj R. Belić, and Siu A. Chin. Systematic generation of higher-order solitons and breathers of the hirota equation on different backgrounds. *Nonlinear Dynamics*, volume 89, pages 1637–1649, 2017.
- 2017 Runze Li, **Omar A. Ashour**, Jie Chen, H. E. Elsayed-Ali, and Peter M. 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*, volume 121, page 055102, 2017.

- 2017 Siu A. Chin, **Omar A. Ashour**, Stanko N. Nikolic, and Milivoj R. Belic. Peak-height formula for higher-order breathers of the nonlinear schrodinger equation on non-uniform backgrounds. *Physical Review E*, volume 95, page 012211, 2017.
- 2016 Siu A. Chin, **Omar A. Ashour**, Stanko N. Nikolic, and Milivoj R. Belic. Maximal intensity higher-order akhmediev breathers of the nonlinear schrödinger equation and their systematic generation. *Physics Letters A*, volume 380, pages 3625–3629, 2016.
- 2015 Siu A. Chin, **Omar A. Ashour**, and Milivoj R. Belic. Anatomy of the akhmediev breather: Cascading instability, first formation time, and fermi-pasta-ulam recurrence. *Physical Review E*, volume 92, page 063202, 2015.

Research Experience

- 2019 – **Physics Department, UC Berkeley**, Berkeley, CA.
DFT and GW calculations of topological insulators and transition metal dichalcogenides.
PI: Steven G. Louie
- 2017 – 2018 **NSF Nanoscale Science & Engineering Center, UC Berkeley**, Berkeley, CA.
Numerical and experimental studies of transition metal dichalcogenides and photonic waveguides.
PI: Xiang Zhang
- 2016-2017 **Texas A&M Engineering Experiment Station (TEES)**, College Station, TX.
Numerical and experimental studies of ultrafast dynamics in metal thin films
PI: Peter Rentzepis
- 2015 **Institute of Electronic Structure and Laser (IESL-FORTH)**, Heraklion, Greece.
Femtosecond laser machining of complex waveguide arrays
PI: Stelios Tzortzakis
- 2014-2017 **Department of Physics and Astronomy, Texas A&M University**, College Station, TX.
Studies of periodic solutions of nonlinear Schrödinger equations.
PI: Siu A. Cin, Milivoj R. Belić

Fellowships & Awards

- 2018 – 2019 **Anselmo J. Macchi Graduate Fellowship**, UC Berkeley
- 2017 – 2019 **Berkeley Graduate Fellowship**, UC Berkeley
- 2017 – 2018 **Cornell Graduate Fellowship (declined)**, Cornell University
- 2015, 2017 **Gathright Scholar Award for outstanding scholastic achievement**, Texas A&M University
- 2016 **Richard E. Ewing Award for excellence in student research**, Texas A&M University
- 2016 **Takreem Award for best student research**, Qatar Foundation for Education and Science
- 2014 – 2017 **Merit Scholarship**, Qatar Foundation for Education and Science

Community Service and Volunteer Work

- 2020 **Scientist Ambassador**, Spent four weeks as an ambassador to a first grade class, teaching them about science and answering any questions they may have about a career in the field.
- 2018 **Be A Scientist**, Worked with students at local middle schools for 6 weeks to design and conduct science experiments and foster critical thinking skills
- 2014 **Qatar Robotics Institute for Development**, taught children and seniors about robotics and programming.