

NAKIB HAIDER PROTİK

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RESEARCH AREAS

My current main focus is on semiclassical transport. Specifically, using analytical and computational tools, I study how various scattering processes in matter – phonon-phonon, phonon-electron, phonon-defects and electron-defects – affect transport properties. I am also interested in quantum transport, topological defects, computational physics, among other things.

EDUCATION

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| 2014-(19) | PhD Physics , Boston College.
Theoretical/computational condensed matter physics with an emphasis on semiclassical transport.
Thesis (tentative): Lattice and carrier transport in semiconductors from first principles.
Committee: David Broido (chair), Kenneth Burch, Krzysztof Kempa. |
| 2011-13 | MSc Physics , University of Ottawa.
Attosecond phenomena in laser-matter interaction using computational many-body quantum methods.
Thesis: The multiconfiguration time dependent Hartree-Fock method for cylindrical systems .
Advisor: Thomas Brabec. |
| 2006-10 | BSc Physics with minor in Computer Science , BRAC University.
Thesis: Chern-Simons action on the noncommutative plane.
Advisor: Arshad Momen. |
| 2009 | Erasmus exchange term, Lucian Blaga University of Sibiu. |

PUBLICATIONS

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| 2019 | Xueyuan Wu, Jiantao Kong, Nakib Haider Protik , David Broido, and Krzysztof Kempa.
Tailoring the electron-phonon interaction with metallic plasmonic structures .
In <i>Materials Today Physics</i> . |
| 2017 | Nakib Haider Protik , Ankita Katre, Lucas Lindsay, Jesús Carrete, Natalio Mingo, and David Broido.
Phonon thermal transport in 2H, 4H and 6H silicon carbide from first principles .
In <i>Materials Today Physics</i> 1C, 31-38. |
| 2016 | Nakib Haider Protik , Jesús Carrete, Nebil A. Katcho, Natalio Mingo, and David Broido.
Ab initio study of the effect of vacancies on the thermal conductivity of boron arsenide .
In <i>Physical Review B</i> 94, 045207. |
| 2014 | G. Orlando, C. R. McDonald, N. H. Protik , G. Vampa, and T. Brabec.
Tunneling time, what does it mean?
In <i>Journal of Physics B</i> 47, 204002. |
| 2014 | G. Orlando, C. R. McDonald, N. H. Protik , and T. Brabec.
Identification of the Keldysh time as a lower limit for the tunneling time .
In <i>Physical Review A</i> 89, 014102. |

TALKS

- 2019 **Nakib Haider Protik**, Mauro Fava, Natalio Mingo, Jesús Carrete, George Madsen, Navaneetha Ravichandran and David Broido.
[Effect of substitutional defects on the thermal conductivity of boron arsenide.](#)
At APS March Meeting, Boston, March 4, 2019.
- 2018 **Nakib Haider Protik** and David Broido.
[Effect of plasmon-LO phonon coupling on the mobility of GaN.](#)
At APS March Meeting, Los Angeles, March 7, 2018.
- 2017 **Nakib Haider Protik**, Ankita Katre, Lucas Lindsay, Jesús Carrete, Bonny Dongre, George K. H. Madsen, Natalio Mingo, David Broido.
[Phonon thermal transport in 2H, 4H and 6H silicon carbide from first principles.](#)
At APS March Meeting, New Orleans, March 13, 2017.
- 2016 **Nakib Haider Protik**, Jesús Carrete, Natalio Mingo, Nebil A. Katcho and David Broido.
[Ab initio study of the effect of vacancies on the thermal conductivity.](#)
At APS March Meeting, Baltimore, March 15, 2016.
- 2014 **Nakib Haider Protik.**
Quantum Manybody Physics (Or what I've been up to since I left BRACU).
At BRAC University, June 19, 2014.
- 2013 **Nakib Haider Protik.**
Manybody Quantum Dynamics.
At Ottawa-Carleton Institute of Physics Graduate Symposia, April 30, 2013.
- 2010 **Nakib Haider Protik** and Arshad Momen.
Simulating the Topologically Massive Maxwell Theory on the Moyal Plane.
At International Conference on Recent Advance in Physics - 2010, March 29, 2010. Technical Session 4B: Statistical and Theoretical Physics - 1.
- 2009 Arshad Momen and **Nakib Haider Protik.**
Simulating the Abelian Chern-Simons Theory on the Moyal Plane.
At Physics Conference, TIM - 09, November 27, 2009. Section: Theoretical and Computational Physics.

TEACHING

- **Teaching Assistant @ Boston College**

- Quantum Physics I: generating homework solutions and grading.
- Intro to Physics Recitation I, II: recitations and grading.
- 1st year physics labs: experiments demonstration and lab report grading.

- **Teaching Assistant @ University of Ottawa**

- Fundamentals of Applied Physics III: grading.
- Advanced Optics & Introduction to Photonics: grading.
- Principles of Physics I: recitations and grading.
- Electricity and Magnetism: recitations and grading.
- Fundamentals of Physics for Engineers: recitations and grading.
- 1st year physics lab: experiments demonstration and lab report grading.

- **Teaching Assistant @ BRAC University**

Applied Physics Lab I: lab management, experiments demonstration, exam preparation and grading.

Principles of Physics I, II labs: lab management, experiments demonstration, exam preparation and grading.

Mathematics II lab: lectures, exam preparation and grading.

- **Lab Assistant @ BRAC University**

Physics Lab I,III: experiments demonstration and lab report grading.

SERVICE

Reviewing:

- *Acta Physica Polonica A* (2018)
- *Journal of Physics and Chemistry of Solids* (2018)
- *Materials Today Physics* (2017 x 2)

Other:

- Student representative in Graduate Affairs Committee (2018-), Boston College.
- Graduate Teaching Committee liaison person (2017-18), Boston College.

HONORS AND AWARDS

2016-18	Conference travel grant, Graduate Student Association, Boston College.
2016-18	Conference travel grant, Graduate School of Arts and Sciences, Boston College.
2011-13	Differential admission scholarship, University of Ottawa.
2010	Vice Chancellor's Medal, BRAC University.
2009	Erasmus Mundus scholarship.

TECHNICAL SKILLS

- » Operating Systems: GNU/Linux and Microsoft Windows.
- » Experience with High Performance Computing.
- » Computer languages: Java, C, C++, Fortran 90, Python, Lisp, Mathematica.
- » Other tools: MPI, OpenMP, Git, Bash, \LaTeX , etc.

LANGUAGES

- » Bangla (native); English (full working proficiency); Esperanto (lower intermediate); French (beginner).