

Date (June, 2025)

CURRICULUM VITAE AND LIST OF PUBLICATIONS

Personal Details

Dima Cheskis

Date and place of birth: 30.10.1973, Moscow, Russia

Date of Immigration: 1990

Telephone number at work: 074-7288230

Telephone number at home: 054-7594001

Education

Undergraduate and Graduate Studies

Ph.D. 2002-2006, Tel-Aviv University, School of Physics, Professor Shimshon Barad, "Laser Induced Magnetic Dynamics in Nickel."

M.Sc. 2000-2002, Tel-Aviv University, School of Physics, Professor Shimshon Barad, "Spatio-Temporal Localization in a Silica Nonlinear Waveguide Array."

B.Sc. 1995-1999, Tel-Aviv University, School of Physics.

Post-Doctoral Studies

2006-2010, Technion – Israel Institute of Technology, Solid State Institute, Supervisor: Professor Efrat Lifshitz.

Research in the area of photoluminescence spectroscopy of nanocrystal quantum dots.

Academic Ranks and Tenure in Institutes of Higher Education

2012-2020, Ariel University, Physics Department, Lecturer.

2022-now, Ariel University, Physics Department, Senior Lecturer.

Professional Activities

Positions in academic administration (Departmental, Faculty, and University)

2022-now, a chief member of the Physics Department Purchase Commission.

Professional functions outside universities/institutions (inter-university, national, international)

Israel Science Foundation (ISF) reviewer

Editor or member of the editorial board of a scientific or professional journal

A member of the editorial board from 2020, Magnetochemistry, MDPI.

Membership in professional/scientific societies

2012- Now, Israel Physical Society (IPS).

Educational activities

Courses Taught in Recent Years

2012-2020, Electricity and Magnetism, Undergraduate course, Physics Department.

2012-2021 Mechanics, Undergraduate Course, Physics Department

2013-2022, Advanced Physics Laboratory, Undergraduate course, Physics Department.

2012-2016, Electronics, Undergraduate, Physics Department.

Supervision of Research Students

2024-now Shaday Jesus Nobosse Nguemeta, M.Sc. degree, Transport Measurements studies of Weyl Semimetals

2024-now Eddy Divin Kenvo, PhD's degree, Magneto-Optical studies of Weyl Semimetals.

2017 Yossi Sharon, Undergraduate, Low current Hall Effect Sensor.

2015 Yannai Nemias Coen, Undergraduate, Transport measurements of Reduced Graphene Oxide (RGO).

Awards, Citations, Honors, Fellowships

Honors, Citation Awards (including during studies)

2006 Tel Aviv University, Los Angeles Scholarship for graduate studies

Fellowships (e.g., Fulbright)

2007-2008 The Schulich Fellowship for Post-doctoral studies, 120,000 ₪
Partial financing of post-doctoral studies at Technion

Citation Index

H-index (ISI / Google Scholar): 6/9

Total number of citations of all articles (ISI / Google Scholar): 311/419

Total number of citations without self-citations (ISI / Google Scholar): 303/411

Articles

Refereed articles and refereed letters in scientific journals, running numbers

1. O. Seri-Livni, C. Saguy, F. Horani, E. Lifshitz and **D. Cheskis***, 2021, "Effective Reduction of Oxygen Debris in Graphene Oxide", *Physica Status Solidi B*, 2000505, **IF=1.46, Cites=7**
2. **D. Cheskis***, 2020, "Magneto-Optical Tools to Study Effects in Dirac and Weyl Semimetals", *Symmetry* 12 (9), 1412, (2020), **IF=2.645, Cites=4**
3. L. Singh, E. D. Epstein, **D. Cheskis**, S. Sternklar, and Y. Gorodetski, 2020, "Experimental investigation of Kramers–Kronig relations in chiral metasurfaces with reduced rotational symmetry", *Journal of Optics* 22 (12), 12LT01, **IF=2.753, Cites=5**
4. M. Gaft, G. A. Waychunas, G. R. Rossman, L. Nagli, G. Panczer, **D. Cheskis**, and Y. Raichlin, 2020, " Red photoluminescence and purple color of naturally irradiated fluorite", *Physics and Chemistry of Minerals* 47 (11), 1-11, **IF=1.876, Cites=12**
5. D. Rajesh, S. Sternklar, **D. Cheskis**, and Y. Gorodetski, 2019, "Au Plasmonic Shofar Structures", *Plasmonics*, pp 1-8, **IF= 2.926, Cites=0**
6. Y. Sharon, B. Khachatryan and **D. Cheskis***, 2018, "Towards a Low Current Hall Effect Sensor Sensors and Actuators A: Physical, 279, pp 278-283, **IF=2.311, Cites=29**
7. D. Rajesh, S. Nechayev, **D. Cheskis**, S. Sternklar, Y. Gorodetski, 2018, "Probing Spin-Orbit Interaction via Fano Interference", *Applied Physics Letters*, 113, 261104, **IF=3.495, Cites=10**
8. A. Donval, T. Fisher, **D Cheskis**, Y. Ofir, M. Oron, "Increasing dynamic range of cameras with dynamic sunlight filter (DSF)" *Infrared Technology and Applications XXXVII* 8012, 80122A, (2013) **IF=0.56, Cites=6**
9. V. Kloper, V., R. Osovsky, **D. Cheskis**, A. Sashchiuk, and E. Lifshitz (2009), "Suppressed blinking in CdTe/CdSe core-shell quantum dots. *Physica Status Solidi (c)*", 6: 2719–2721. **IF=0.83, Cites=7**
10. **D. Cheskis**, V. Kloper, R. Osovsky, A. Sachshuik, M. Kroner and E. Lifshitz, "Multiexcitons in a Single Core-Shell Colloidal Quantum dots" (2009 MRS Fall Meeting Symposium N proceedings) **IF=0.18, Cites=0**
11. R. Osovsky, **D. Cheskis***, V. Kloper, A. Sachshuik, M. Kroner, and E. Lifshitz "Continuous-wave pumping of multiexciton bands in the photoluminescence spectrum of a single CdTe-CdSe core-shell colloidal quantum dot", *Phys. Rev. Lett.* 102, 197401 (2009). **IF=8.839, Cites=136**
12. M. Elazar, M. Sahaf, L. Szapiro, **D. Cheskis**, and S. Bar-Ad, "Single-pulse magneto-optic microscopy: a new tool for studying optically induced magnetization reversals," *Optics Letters*, 33, 2734-2736 (2008) **IF=3.589, Cites=8**
13. **D. Cheskis**, Y. Linzon, I. Ilsar, S. Bar-Ad, and H. S. Eisenberg, "Raman-induced localization in Kerr waveguide arrays", *Optics Letters* 32, 2459-2461 (2007). **IF=3.589, Cites=3**
14. Y. Linzon, **D. Cheskis**, I. Ilsar, R. Morandotti, S. Aitchison, S. Bar-Ad, "Self-focusing, breakup, and trapping of Raman-shifted femtosecond pulses in homogeneous slab and weakly coupled arrays of non-linear glass silica waveguides", *Topical Problems of Nonlinear Wave Physics*, International Society for Optics and Photonics, pp 5975oT (2006), **IF=0.37, Cites=0**
15. **D. Cheskis**, A. Porat, L. Szapiro, O. Potashnik, and S. Bar-Ad, "Saturation of laser-induced demagnetization in nickel", *Phys. Rev. B*, 72, 014437 (2005). **IF=3.813, Cites =37**

- 16. D. Cheskis**, Y. Linzon, I. Ilsar, R. Morandotti, J. S. Aitchison, and S. Bar-Ad, "Self-focusing and trapping of Raman-shifted pulses in periodic non-linear waveguides", Proc. of SPIE, Vol. 6259, 62590L, ICONO 2005. **IF=0.56**, **Cites=0**
- 17.** Y. Linzon, I. Ilsar, **D. Cheskis**, R. Morandotti, and S. Bar-Ad, "Near-field imaging of non-linear pulse propagation in planar silica waveguides", Phys. Rev.. E 72 066607 (2005). **IF=2.284**, **Cites=6**
- 18. D. Cheskis**, S. Bar-Ad, R. Morandotti, J. S. Aitchison, H. S. Eisenberg, Y. Silberberg, and D. Ross, "Strong Spatiotemporal Localization in a Silica Nonlinear Waveguide Array", Phys. Rev.. Lett., 91, 223901 (2003). **IF=8.839**, **Cites=98**
- 19.** A. Tsukernik, **D. Cheskis**, O. Potashnik, A. Palevski, S. Bar-Ad, S. Luryi, A.Y. Cho, "Anomalous Behavior of the Fermi Energy in Heavily Tin-Doped InGaAs", Eur. Phys. J., B 23, 341-344, (2001). **IF=1.536**, **Cites=3**

Published scientific reports and technical papers

1. **D. Cheskis**, "Transport measurements of reduced graphene oxide," Fourteenth Israeli-Russian Bi-National Workshop 2015
"The optimization of the composition, structure, and properties of metals, oxides, composites, nano and amorphous materials", pp 48-53 **IF=0**, **Cites=0**
2. S. Barad, **D. Cheskis**, R. Morandotti, J. S. Aitchison, H. Eisenberg, Y. Silberberg, D. Ross, "Quasi-stable propagation of short laser pulses in silica waveguide arrays in the anomalous dispersion regime", Nonlinear Guided Waves and Their Applications, WB2 (2004), **IF=0**, **Cites=0**
3. **D. Cheskis**, S. Bar-Ad, R. Morandotti, J. S. Aitchison, H. S. Eisenberg, Y. Silberberg, and D. Ross, "Stable soliton vs. collapse dynamics of short laser pulses in non-linear structures with intermediate dimensionality", HAIT Journal of Science and Engineering, 1, 363-377 (2004). **IF=0**, **Cites=0**
4. R Morandotti, **D Cheskis**, S Bar-Ad, JS Aitchison, D Ross, H. S. Eisenberg, "Strong spatiotemporal localization in an array of silica waveguides", Nonlinear Guided Waves and Their Applications, NLTuA6 (2002) **IF=0**, **Cites=0**

Lectures and Presentations at Meetings and Invited Seminars Not Followed by Published Proceedings.

Presentation of papers at conferences/meetings

1. E. D. K. Songwa and **D. Cheskis**, 2024, "Studying topological properties of ferromagnetic Weyl semimetals." Spintronics XVII. Vol. 13119, SPIE.
2. **D. Cheskis**, 2018, "DC low current Hall effect measurements", 2018 IEEE International Conference on the Science of Electrical Engineering in Israel (ICSEE)
3. **D. Cheskis**, 2018, "Polarization controlled emission on gold nanogrooves and nanowires", 2018 IEEE International Conference on the Science of Electrical Engineering in Israel (ICSEE)
4. **D. Cheskis**, R. Osovsky, V. Kloper, L. Fradkin, A. Sashchiuk, M. Kroner, E. Lifshitz, 2009, "Multiexcitons in colloidal semiconductor nanocrystals Quantum

Electronics and Laser Science Conference, QELS '05, Baltimore, MD, USA, CLEO/QELS 2009. Conference on, pp. 1-1. IEEE, 2009.

5. **D. Cheskis**, R. Osovsky, V. Kloper, L. Fradkin, A. Sashchiuk, M. Kroner, E. Lifshitz, 2009, "Multiexcitons in colloidal semiconductor nanocrystals" French Israel Symposium on Non-linear and Quantum Optics FRISNO-10 Ein-Bokek, Israel.
6. **D. Cheskis**, A. Porat, L. Szapiro, O. Potashnik, S. Bar-Ad, 2005, "Saturation of the ultrafast laser-induced demagnetization in nickel" Quantum Electronics and Laser Science Conference, QELS '05, Baltimore, MD, USA, QELS'05, vol. 2, pp. 726-728. IEEE.
7. **D. Cheskis**, S. Bar-Ad, R. Morandotti, J. S. Aitchison, H. S. Eisenberg, Y. Silberberg, and D. Ross, 2003, "Stable soliton vs. collapse dynamics of short laser pulses in non-linear structures with intermediate dimensionality" Russian-Israeli Conference Frontiers in Condensed Matter Physics, Shores, Israel HAIT Journal of Science and Engineering, Volume 1, Issue 2, pp. 363-377.

Seminar presentations at universities and institutions

2013, Physics Department, National Tsing Hua University, Hsinchu, Taiwan

2015, Physics Department, Bar-Ilan University, Israel

2024, Department of Physics and Astronomy, Stony Brook University, NY, USA

2024, Department of Physics & Astronomy, Texas A&M University, TX, USA

Publications since last promotion

Articles

1. O. Seri-Livni, C. Saguy, F. Horani, E. Lifshitz and **D. Cheskis***, 2021, "Effective Reduction of Oxygen Debris in Graphene Oxide", Physica Status Solidi B, 2000505, **IF=1.46**, **Cites=7**
2. **D. Cheskis***, 2020, "Magneto-Optical Tools to Study Effects in Dirac and Weyl Semimetals", Symmetry 12 (9), 1412, (2020), **IF=2.645**, **Cites=4**
3. L. Singh, E. D. Epstein, **D. Cheskis**, S. Sternklar, and Y. Gorodetski, 2020, "Experimental investigation of Kramers–Kronig relations in chiral metasurfaces with reduced rotational symmetry", Journal of Optics 22 (12), 12LT01, **IF=2.753**, **Cites=5**
4. M. Gaft, G. A. Waychunas, G. R. Rossman, L. Nagli, G. Panczer, **D. Cheskis**, and Y. Raichlin, 2020, " Red photoluminescence and purple color of naturally irradiated fluorite", Physics and Chemistry of Minerals 47 (11), 1-11, **IF=1.876**, **Cites=12**
5. D. Rajesh, S. Sternklar, **D. Cheskis**, and Y. Gorodetski, 2019, "Au Plasmonic Shofar Structures", Plasmonics, pp 1-8, **IF= 2.926**, **Cites=0**
6. Y. Sharon, B. Khachatrian and **D. Cheskis***, 2018, "Towards a Low Current Hall Effect Sensor Sensors and Actuators A: Physical, 279, pp 278-283, **IF=2.311**, **Cites=29**
7. D. Rajesh, S. Nechayev, **D. Cheskis**, S. Sternklar, Y. Gorodetski, 2018, "Probing Spin-Orbit Interaction via Fano Interference", Applied Physics Letters, 113, 261104, **IF=3.495**, **Cites=10**

Lectures and Presentations at Meetings and Invited Seminars Not Followed by Published Proceedings

1. **D. Cheskis**, 2022, "Magneto-Optical Measurements of Dirac and Weyl semimetals" Poster, QuantuMatter conference, Barcelona, Spain.
2. **D. Cheskis**, 2022, "Magneto-Optical Spectroscopy of Weyl semimetals". Magnetismmeet conference. Invited talk, online.
3. **D. Cheskis**, 2021, "Topological properties of Weyl semimetals", Conmat conference, Invited talk, online.
4. **D. Cheskis**, 2020, "STM and STS measurements of GO single layers" Graphene2020 (online), Grenoble, France.
5. **D. Cheskis**, 2019, "Scanning Tunneling Spectroscopy of Graphene Oxide/Reduced Graphene Oxide" Graphene2019, Roma, Italy.
6. **D. Cheskis**, 2018, "DC low current Hall effect measurements", 2018 IEEE International Conference on the Science of Electrical Engineering in Israel (ICSEE), Eilat, Israel.
7. **D. Cheskis**, 2018, "Polarization controlled emission on gold nanogrooves and nanowires", 2018 IEEE International Conference on the Science of Electrical Engineering in Israel (ICSEE), Eilat, Israel.
8. **D. Cheskis**, 2018, "Small magnetoresistance deviations in bilayer graphene measurements", BIT's 4th Annual World Congress of Smart Materials, Osaka, Japan.
9. **D. Cheskis**, 2017, "Unusual electrical and magnetic behavior of graphene and graphene oxide thin films," EMRS, Strasbourg, France.
10. **D. Cheskis**, 2017, "Magnetoresistance of bilayer graphene at the low magnetic field" Graphene2017, Barcelona, Spain.
11. **D. Cheskis**, 2015, "Non-linear optical parameters of graphene-based materials" FRISNO 13, Aussois, France.
12. **D. Cheskis**, 2015, "Transport measurements of reduced graphene oxide," Fourteenth Israeli-Russian Bi-National Workshop 2015 "The optimization of the composition, structure, and properties of metals, oxides, composites, nano and amorphous materials", pp 48-53.

Patents

2022 Yossi Sharon, Bagrat Khachatryan, **Dima Cheskis**, "Low current Hall effect sensor", US Patent App. 17/440,903.

2014 **Dima Cheskis**, Ruth Osovsky, Viktoria Kloper, Lilac Amirav, Aldona Sashiuk, Maya Brumer-Gilary, Ariel Kigel, Efrat Lifshitz, "Core-alloyed shell semiconductor nanocrystals", US 8784685 B2 USA.

2012 **Dima Cheskis**, Ariela Donval, Ido Dotan, Doron Nevo, Yuval Ofir, Moshe Oron, "Enhanced response photochromic composition and device", US 20140124715 A1 USA.

Research Grants

2025-2028 Ministry of Innovation, Science & Technology, "Magneto-Optically Measured Chiral Quantum Bits", Totally 400 kSh for three years

2022-2023 Ministry of Defence, MAFAT, "Distance Magneto-Optical Measurements" 300 kSh first year, 300 kSh second year

2015-2017 Ministry of Economy and Industry/Chief Scientist/Kamin Program – Dima Cheskis, Efrat Lifshits (both are principal investigators) Thermocouple detector made from graphene, 2-year grant, Annual amount 151k\$, Total amount 302k\$

Synopsis of research, including reference to publications and grants in the above lists

Research Overview

Our research investigates magnetic, optical, and electronic phenomena in two-dimensional (2D) materials and three-dimensional (3D) topological crystals. The interest in 2D materials lies in their unique potential for property manipulation using microscopic and macroscopic techniques. For instance, in collaboration with a research group from the Technion, we developed a method to effectively reduce oxygen debris in graphene oxide. This study employed a variety of tools, including STM, HRTEM, AFM, and FTIR. By tuning the oxygen content in graphene oxide, we could modulate its transport and optical properties, particularly controlling its magnetoresistance behavior.

Another major direction of our work involves the study of 3D Dirac and Weyl semimetals, with a particular emphasis on magnetic Weyl semimetals. These systems exhibit a rich interplay between topology and magnetism, leading to unique and intriguing physical properties.

Current Academic Activities

We are currently exploring the topological and magnetic characteristics of magnetic Weyl semimetals. Our experimental setup allows detailed measurements of anomalous Hall resistance and magneto-optical Kerr rotation in WTe₂ Weyl crystals. In parallel, we have initiated the growth of Co₃Sn₂S₂, a magnetic Weyl semimetal. This material enables the observation of quantum topological and chiral effects up to temperatures of approximately 100 K. These phenomena significantly influence electrical transport, magneto-optical response, as well as linear and nonlinear optical properties.

Additional Information

I have recently established a new experimental setup, and together with my growing team, we have begun intensive studies of Weyl semimetals. Additionally, we are awaiting final approval for a research proposal submitted to the Ministry of Defence (MAFAT).

Articles Under Review

1. S. Sahoo, A. Yaroshevsky, D. Cheskis, Y. Gorodetski,
Spatio-Temporal Weak Measurement of Chiral Ultrashort Laser Pulse,
arXiv:2506.07893 [physics.optics], 2025.
2. E.D.K. Songwa, D. Cheskis,
New Magnetic Temperature Non-Contact Sensor,
arXiv:2506.07512 [physics.ins-det], 2025.
3. L. Nagli, K. Kulikov, D. Cheskis,
Some Features in 4-Level Generation in LIPLs,
arXiv:2506.07220 [physics.optics], 2025.
4. S. Bondarenko, D. Cheskis, R. Singh,
Interior of a Black Hole in the Framework of the Scalar Quasiparticle Model,
arXiv:2506.02944 [gr-qc], 2025.
5. E.D.K. Songwa, S.J.N. Nguemeta, H. Gabber, R. Aharonof, D. Cheskis,
Anomalous Hall Effect in Thick CoSnS Weyl Semimetal Crystals,
arXiv:2505.22183 [cond-mat.mtrl-sci], 2025.
6. D. Cheskis, A. Prygarin,
Pomeron Evolution and Squeezed States in Quantum Optics,
arXiv:2505.02684 [quant-ph], 2025.