

## CURRICULUM VITAE



### FIL Dmytro

#### Affiliation and official address:

Leading Researcher, Department of Theory of Condensed Matter,  
Institute for Single Crystals NAS of Ukraine  
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#### Education (*degrees, dates, universities*)

1986	MSc (Physics), Kharkiv State University named after A.M.Gorky (now V.N.Karazin Kharkiv National University), Faculty of physics and technology, theoretical nuclear physics department? USSR
1988	Candidate of Sciences (Ph. D), Phys. & Math, Institute for Single Crystals, Thesis title: Spin wave generation in ferromagnetic semiconductors by strong electromagnetic fields, USSR
1994	Senior Research Fellow (Academic rank), Institute for Single Crystals NAS of Ukraine, Kharkiv
2002	Doctor of Sciences, Phys. & Math, Institute for Single Crystals NAS of Ukraine, Thesis title: Phonon mediated collective phenomena in low-dimensional strongly correlated systems, Kharkiv

#### Career/Employment (*employers, positions and dates*)

1986-to date	Institute for Single Crystals National Academy of Sciences of Ukraine	Junior Researcher (1986-1989), Researcher (1989-1990), Senior Researcher (1990-1996), Leading Researcher (1996-to date)
2004-2008	Ukrainian State Academy of Rail Transport, Kharkov, Ukraine	Associate Professor (2004-2007), Full Professor (2007-2008), Department of Physics (part-time job)
2004-2005	National Technical University "Kharkov Polytechnical Institute", Ukraine	Full Professor, Department of Low Temperature Physics and Technology (part-time job)
2015-to date	V.N.Karazin Kharkiv National University, Ukraine	Full Professor, Department of Theoretical Physics named after Acad. I.M.Lifshitz (part-time job)

#### Ph.D. supervising

L. Yu. Kravchenko (2011), K. V. Germash (2019)

#### Visiting research grants

1991-1992	Dortmund Technical University, Germany Bundesminister fur Forshung and Technologie and Deutsche Akademische Auslandsdienst (DAAD) grant
2010	Max Planck Institute for Solid State Research, Stuttgart, Germany Stipendium by Max Planck Society.

## International and National projects

1998-2000	INTAS project " Macroscopic quantum phenomena in confined Bose gases"	team member
2002-2004	INTAS project "Novel Macroscopic Quantum States in Ultracold Gases"	team member
2007-2009	CRDF Cooperative Grants Program project "Supersolidity phenomenon in solid He <sup>4</sup> "	team member
2012-2013	CNRS (France)-NAS of Ukraine scientific exchange project "Coherent phenomena in a system of fermionic polar molecules in crossed fields"	team leader
2010-2014	Ukraine State scientific and technical program "Nanotechnologies and nanomaterials", project "Graphene based superconducting exciton systems with record parameters"	project leader
2017-2018	Ukraine State Fund for Fundamental Research, project "Plasmons in optically nonlinear graphene nanostructures with strong electron correlations"	project leader

## Main field of activity and current research interest

Superfluidity and Bose-Einstein condensation in low-dimensional systems, topological phases and topological insulators, plasmons in two-dimensional systems, nonlinear electromagnetic properties of two-dimensional crystals, properties of quantum vortices in superconductors and superfluids, material science (DFT calculation of electron band spectrum, defect formation energies and defect structure in crystals)

## Publications:

80 original, review, editorial, and book chapter articles. Scopus *h*-index: **11** ;  
Scopus Author ID: 148302133006, [Dmitrii Fil ORCID iD](#) 0000-0001-5091-1361  
[Web of Science ResearcherID A-7572-2010](#), [Dmitrii Fil Google Scholar](#)

## Recent selected publications

1. D.V.Fil, S.I.Shevchenko, Transition to a supersolid phase in a two-dimensional dilute gas of electron-hole pairs. *Fiz. Nizk. Temp.* **46**, 556-565 (2020); [Low Temp. Phys.](#) **46**, 465-474 (2020).
2. L.Yu.Kravchenko, D.V.Fil, Control of charge state of dopants in insulating crystals: Case study of Ti-doped sapphire, [Physical Review Research](#) **2**, 023135 (2020).
3. D.V.Fil, S.I.Shevchenko, Vortex generation in a superfluid gas of dipolar chains in crossed electric and magnetic fields, *Fiz. Nizk. Temp.* **46**, 504-508 (2020); [Low Temp. Phys.](#) **46**, 420-424 (2020).
4. K.V.Germash, D.V.Fil. Anderson-Bogoliubov and Carlson-Goldman modes in counterflow superconductors: Case study of a double monolayer graphene, [Phys. Rev. B](#) **99**, 125412 (2019).
5. D.V.Fil, S.I.Shevchenko, Electron-hole superconductivity (Review), *Fiz. Nizk. Temp.* **44**, 1111-1160 (2018); [Low Temp. Phys.](#) **44**, 867-909 (2018).
6. L.Yu.Kravchenko, D.V.Fil, Defect complexes in Ti-doped sapphire: A first principles study, [Journal of Applied Physics](#) **123**, 023104 (2018).
7. K.V.Germash, D.V.Fil, Strong enhancement of third-harmonic generation in a double layer graphene system caused by electron-hole pairing, [EPL](#) **118**, 67008 (2017).
8. D.V.Fil, S.I.Shevchenko, Superfluidity of a dilute gas of electron-hole pairs in a bilayer system, *Fiz. Nizk. Temp.* **42**, 794-804 (2016); [Low Temp. Phys.](#) **42**, 420-424 (2016).
9. K.V.Germash, D.V.Fil, Electromagnetic properties of a double-layer graphene system with electron-hole pairing, [Phys. Rev. B](#) **93**, 205436 (2016).
10. K.V.Germash, D.V.Fil, Diamagnetism and suppression of screening as hallmarks of electron-hole pairing in a double layer graphene system, [Phys. Rev. B](#) **91**, 115442 (2015).