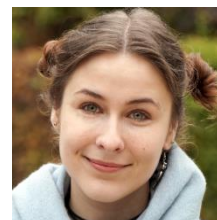


## DR KHRYSTYNA LEVCHENKO



ESPRIT Fellow and Senior Postdoctoral Researcher in the Nanomagnetism and Magnonics group at the Faculty of Physics, University of Vienna (Vienna, Austria).

### PERSONAL DETAILS

Date, place of birth	August 3, 1991; Ternopil (Ukraine)
Gender	Female
Nationality	Ukrainian
Phone (work)	+43-1-4277-739-30; +43 677 637 516 90 (mobile)
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### ACADEMIC EDUCATION / DEGREES

2008–2013	<b>Bachelor and Master</b> in Automation & Computer-Integrated Technologies at the Ternopil National Technical University (Ukraine)
2013–2019	<b>Ph.D.</b> degree in Physics at the Institute of Physics, Polish Academy of Sciences (Poland). Supervisor: Prof. T. Wosiński, PhD thesis (19.12.2019): “(Ga,Mn)(Bi,As) Dilute Magnetic Semiconductor – Characterization of the Layers and Electron Transport in Low-Dimensional Structures”
01.2020–11.2023	<b>Post-doctoral researcher</b> , Faculty of Physics, University of Vienna
11.2023–present	<b>Senior Post-doctoral researcher</b> , Faculty of Physics, University of Vienna

### PROFESSIONAL CAREER

05.2013–09.2013	Pre-diploma internship, Marie Skłodowska-Curie University of Physics, (Poland). Supervisor: Prof. J. Żuk, co-supervisor: Dr O. Jastrubchak
2013–2019	PhD student, Institute of Physics, Polish Academy of Sciences (Poland)
2017–2019	PI of “The phenomena of magnetoresistance memory in nanostructures from a ferromagnetic semiconductor (Ga,Mn)(Bi,As)” solo project PRELUDIUM P-466/P (UMO-2016/23/N/ST3/03501) by NCN (Poland)
2020–2023	Post-doctoral researcher, Faculty of Physics, University of Vienna. Experimental researcher in “Functional layers of nm-thick YIG films and microstructure” DFG (271741898)-FWF (I 4696-N) project
Since 2020	Postdoctoral Researcher at the Nanomagnetism and Magnonics Research Unit, Faculty of Physics, University of Vienna
2021–2024	Co-supervisor of Master student (MSc Aram Sajdak, year of graduation – 2024), Bachelor Student (BSc Fiona Rechberg, year of graduation – 2023)
11.2023–now	ESPRIT Fellow and PI of ESP 526 “Topological magnonic nanocrystals” Early-Stage Program ESPRIT by Austrian Science Funds (FWF)

## PUBLICATIONS AND PRESENTATIONS

12 peer-reviewed articles

32 contributions to the conferences (incl. 2 invited talks and 20 oral presentations)

ORCID-ID: [0000-0002-0903-5942](https://orcid.org/0000-0002-0903-5942), Web of Science: [AAE-6593-2019](https://www.webofscience.com/wos/author/uri/uri:asci:AAE-6593-2019), Scopus: [57190231436](https://orcid.org/57190231436)

## AREAS OF SCIENTIFIC INTERESTS AND KEY ACHIEVEMENTS

### Novel Dilute Magnetic Semiconductor (DMS) nanoscale epitaxial films for spintronics:

- Magneto-transport properties of (Ga,Mn)(Bi,As) with enhanced spin-orbit coupling (anisotropic magnetoresistance AMR, planar Hall effect PHE, anomalous Hall effect AHE)
- Verification of the homogeneous ferromagnetic phase in DMS thin films via the muon spin relaxation spectroscopy
- (Ga,Mn)(Bi,As) nanocrosses and nanorings for the magnetic-memory conceptual applications

### Magnetisation dynamics in ferrites and nanoscaled magnonics:

- Ga:YIG fast exchange magnonics
- Magnetocrystalline anisotropy in the nanometre-thick YIG and YIG-based films
- Micro-focused time- and space-resolved Brillouin Light Scattering (BLS) spectroscopy for the investigation of nonlinear magnon scattering in YIG nanoconduits
- Parametric generation of spin waves in nanoscaled magnonic structures

### Spin-wave RF applications:

- Nanoscale spin-wave RF filters and multiplexers for 5G communication systems
- Development and optimisation of the macroscale low-loss spin-wave RF filters
- Epitaxial nanoscale barium hexaferrites for applied spin-wave operations (RF applications, binary magnonic data processing) and fundamental magnonic studies (linear and non-linear magnetisation dynamics)

### Magnonic crystals:

- Nanoscale one-dimensional magnonic crystals
- Antidot-based and bi-component two-dimensional magnonic crystals
- Topologically protected magnonic transport in bi-component magnonic crystals

## 10 MAJOR PUBLICATIONS (peer-reviewed)

- [1] S. Koraltan, et al., "Dipolar skyrmions and antiskyrmions of arbitrary topological charge at room temperature", *Nat. Phys.* (2024). DOI: [10.1038/s41567-023-02358-z](https://doi.org/10.1038/s41567-023-02358-z).
- [2] Q. Wang, et al., "Deeply nonlinear excitation of self-normalised exchange spin waves", *Sci. Adv.* **9**, eadg4609 (2023). DOI: [10.1126/sciadv.adg4609](https://doi.org/10.1126/sciadv.adg4609).
- [3] T. Andrearczyk, **K. Levchenko**, et al., "Impact of bismuth incorporation into (Ga,Mn)As dilute ferromagnetic semiconductor on its magnetic properties and magnetoresistance", *Materials* **16**, 788 (2023). DOI: [10.3390/ma16020788](https://doi.org/10.3390/ma16020788).
- [4] B. Heinz, et al., "Parametric generation of spin waves in nanoscaled magnonic conduits", *Phys. Rev. B.* **105**, 144424 (2022). DOI: [10.1103/PhysRevB.105.144424](https://doi.org/10.1103/PhysRevB.105.144424).
- [5] T. Böttcher, M. Ruhwedel, **K. O. Levchenko**, et al., "Fast long-wavelength exchange spin waves in partially-compensated Ga:YIG", *Appl. Phys. Lett.* **120**, 102401 (2022). DOI: [10.1063/5.0082724](https://doi.org/10.1063/5.0082724).
- [6] S. A. Bunyaev, et al., "Engineered magnetization and exchange stiffness in direct-write Co-Fe nanoelements", *Appl. Phys. Lett.* **118**, 022408 (2021). DOI: [10.1063/5.0036361](https://doi.org/10.1063/5.0036361).

- [7] T. Andrearczyk, **K. Levchenko**, et al., "Structural quality and magneto-electric properties of epitaxial layers of the (Ga,Mn)(Bi,As) dilute magnetic semiconductor", *Materials* **13**, 5507 (2020). DOI: [10.3390/ma13235507](https://doi.org/10.3390/ma13235507).
- [8] **K. Levchenko**, et al. "Evidence for the homogeneous ferromagnetic phase in (Ga,Mn)(Bi,As) epitaxial layers from muon spin relaxation spectroscopy", *Sci. Rep.* **9**, 3394 (2019). DOI: [10.1038/s41598-019-40309-y](https://doi.org/10.1038/s41598-019-40309-y).
- [9] **K. Levchenko**, et al., "Novel quaternary dilute magnetic semiconductor (Ga,Mn)(Bi,As): magnetic and magneto-transport investigations", *J. Supercond. Nov. Magn.* **30**, 825 (2017). DOI: [10.1007/s10948-016-3752-3](https://doi.org/10.1007/s10948-016-3752-3).
- [10] **K. Levchenko**, et al., "Effect of misfit strain in (Ga,Mn)(Bi,As) epitaxial layers on magnetic, magneto-transport properties", *Acta Phys. Pol. A* **129**, 90 (2016). DOI: [10.12693/APhysPolA.129.A-90](https://doi.org/10.12693/APhysPolA.129.A-90).