

List of publications:

of **Alexei Grechnev** (aka Oleksiy Grechnyev, A.G. Grechnev)

Total published books: 1

Total published papers: 28

Total conference presentations : 14 (8 oral + 6 posters)

Books:

John M. Wills, Mebarek Alouani, Per Andersson, Anna Delin, Olle Eriksson, Oleksiy Grechnyev

Full-Potential Electronic Structure Method: Energy and Force Calculations with Density Functional and Dynamical Mean Field Theory (Springer Series in Solid-State Sciences, Book 167)

Springer; 2010 edition (December 2, 2010)

ISBN-10: 3642151434

ISBN-13: 978-3642151439

Journal articles:

1. G. E. Grechnev, A. V. Logosha, A. A. Lyogenkaya, A. G. Grechnev, and A. V. Fedorchenko, *Electronic structure and properties of novel layered superconductors*
Ukr. J. Phys. **59**, 284 (2014).
2. Yu. A. Freiman, Alexei Grechnev, S. M. Tretyak, A. F. Goncharov, C. S. Zha, and Russell J. Hemley
Sound velocities of hexagonal close-packed H_2 and He under pressure
Physycal Review B **88**, 214501 (2013).
3. Alexei Grechnev
Exact ground state of the Shastry-Sutherland lattice with classical Heisenberg spins
Physycal Review B **87**, 144419 (2013).
4. A. G. Grechnev, A. S. Kovalev, and M. L. Pankratova,
Effect of the exchange bias on the magnetization hysteresis of a ferromagnetic film in contact with an antiferromagnet
Fizika Nizkikh Temperatur **39**, 1361 (2013) [Low Temperature Physics **39**, 1060 (2013)].

5. Yu.A. Freiman, Alexei Grechnev, S.M. Tretyak, Alexander F. Goncharov, and Russell J. Hemley,
Sound velocities in solid hydrogen under pressure
Fizika Nizkikh Temperatur **39**, 548 (2013) [Low Temperature Physics **39**, 423 (2013)].
6. A. G. Grechnev, A. S. Kovalev, and M. L. Pankratova,
Influence of magnetic anisotropy on hysteresis behavior in the two-spin model of a ferro/antiferromagnet bilayer with exchange bias
Fizika Nizkikh Temperatur **38**, 1184 (2012) [Low Temperature Physics **38**, 937 (2012)].
7. Yu. A. Freiman, Alexei Grechnev, S. M. Tretyak, Alexander F. Goncharov, and Russell J. Hemley
Equation of state and Raman-active E_{2g} lattice phonon in phases I, II, and III of solid hydrogen and deuterium
Physcal Review B **86**, 014111 (2012).
8. A. Grechnev, S. M. Tretyak, and Yu. A. Freiman
Lattice distortion in hcp rare gas solids
Fizika Nizkikh Temperatur **36**, 423 (2010) [Low Temperature Physics **36**, 333 (2010)].
9. I. Di Marco, J. Minar, J. Braun, M. I. Katsnelson, A. Grechnev, H. Ebert, A.I. Lichtenstein, and O. Eriksson
 γ -Mn at the border between weak and strong correlations
European Physical Journal B **72**, 473-478 (2009).
10. Yu. A. Freiman, S. M. Tretyak, A. Grechnev, Alexander F. Goncharov, John S. Tse, D. Errandonea, Ho-kwang Mao and Russell J. Hemley
Lattice distortion of hcp solid helium under pressure
Physcal Review B **80**, 094112 (2009).
11. A. G. Grechnev, A. S. Kovalev, and M. L. Pankratova
Magnetization field-dependences and the exchange bias in ferro/antiferromagnetic systems. II. Continuum model of a ferromagnetic layer
Fizika Nizkikh Temperatur **35**, 670 (2009) [Low Temperature Physics **35**, 526 (2009)].

12. A. G. Grechnev, A. S. Kovalev, and M. L. Pankratova
Magnetization field-dependences and the exchange bias in ferro/antiferromagnetic systems. I. Model of a bilayer ferromagnetic
 Fizika Nizkikh Temperatur **35**, 603 (2009) [Low Temperature Physics **35**, 476 (2009)].
13. P. Thunstrom, I. Di Marco, A. Grechnev, S. Lebègue, M. I. Katsnelson, A. Svane, and O. Eriksson
Multiplet effects in the electronic structure of intermediate-valence compounds
 Physcal Review B **79**, 165104 (2009).
14. Yu. A. Freiman, Alexander F. Goncharov, S. M. Tretyak, A. Grechnev, John S. Tse, D. Errandonea, Ho-kwang Mao and Russell J. Hemley
Raman scattering in hcp rare gas solids under pressure.
 Physcal Review B **78**, 014301 (2008).
15. A. Grechnev, I. DiMarco, M.I. Katsnelson, A. Lichtenstein, J.M. Wills and O. Eriksson.
Theory of quasiparticle spectra for Fe, Co, and Ni: bulk and surface.
 Physcal Review B **76**, 035107 (2007).
16. O. Eriksson, J.M. Wills, M. Colarieti-Tosti, S. Lebègue and A. Grechnev.
Many-body projector orbitals for electronic structure theory of strongly correlated electrons.
 International Journal of Quantum Chemistry **105**, 160 (2005).
17. A. Grechnev, V.Yu. Irkhin, M.I. Katsnelson and O. Eriksson.
Thermodynamics of a two-dimensional Heisenberg ferromagnet with dipolar interaction.
 Physical Review B **71**, 024427 (2005).
18. P. Souvatzis, J.M. Osorio-Guillen, R. Ahuja, A. Grechnev and O. Eriksson.
Elastic properties of $Mg_{1-x}AlxB_2$ from first principles theory.
 Journal of Physics: Condensed Matter **16**, 5241 (2004).
19. A. Grechnev, S. Li, R. Ahuja, O. Eriksson, U. Jansson and O. Wilhelmsson.

- A new nanolayered material, Nb₃SiC₂, predicted from First-Principle s Theory.*
Applied Physics Letters **85**, 3071 (2004).
20. M. Vennström , A. Grechnev , O. Eriksson and Y. Andersson.
Phase relations in the Ti₃SnD system.
Journal of Alloys and Compounds **364**, 127 (2004).
 21. A. Grechnev, R. Ahuja and O. Eriksson.
Balanced crystal orbital overlap population-a tool for analysing chemical bonds in solids.
Journal of Physics: Condensed Matter **15**, 7751 (2003).
 22. P. Monachesi, M. Palummo, R. Del Sole, A. Grechnev, O. Eriksson.
Ab initio calculation of depth-resolved optical anisotropy of the Cu(110) surface.
Physical Review B **68**, 035426 (2003).
 23. A. Grechnev, P.H. Andersson, R. Ahuja, O. Eriksson, M. Vennström, and Y. Andersson.
H-H interaction and structural phase transition in Ti₃SnH_x.
Physical Review B **66**, 235104 (2002).
 24. E. Lundgren, J.N. Andersen, R. Nyholm, X. Torelles, J. Rius, A. Delin, A. Grechnev, O. Eriksson, C. Konvicka, M. Schmid, P. Varga.
The geometry of the valence transition induced surface reconstruction of Sm(0001).
Physical Review Letters **88**, 136102 (2002) .
 25. P.M. Oppeneer, I. Galanakis, A. Grechnev, O. Eriksson.
Unusual magnetism and magnetocrystalline anisotropy of CrPt₃.
Journal of Magnetism and Magnetic Materials **240**, 371 (2002).
 26. A.G. Grechnev, A.S. Kovalev.
Spin waves near ferro-antiferromagnet interface.
Fizika Nizkikh Temperatur **26**, 457 (2000) [Low Temp. Phys. **26**, 334 (2000)].
 27. A.G. Grechnev, A.S. Kovalev.
Magnetic structure of ferro-antiferromagnet interface. 2. Compensated

interface.

Fizika Nizkikh Temperatur **24**, 839 (1998) [Low Temp. Phys. **24**, 629 (1998)].

28. A.G. Grechnev, A.S. Kovalev.

Magnetic structure of ferro-antiferromagnet interface. 1. Layered antiferromagnet.

Fizika Nizkikh Temperatur **24**, 340 (1998) [Low Temp. Phys. **24**, 257 (1998)].

Peer-reviewed conference contributions:

1. XI international conference "Physical phenomena in solids", 3-6 Dec 2013, Kharkiv, Ukraine

Oral: Alexei Grechnev

Ground state of the classical Shastry-Sutherland lattice and magnetization plateaus in HoB_4 .

2. ICFM 2013: International conference "Functional Materials", 29 Sep-5 Oct 2013, Haspra, Ukraine,

Poster: A.G. Grechnev, A.S. Kovalev, and M.L. Pankratova,

Continuous model for exchange bias phenomenon in the ferro/antiferromagnetic layered system

3. CSMAG'13: 15th Czech and Slovak Conference on Magnetism, 17-21 June 2013, Košice, Slovakia

Oral: Alexei Grechnev

EXACT GROUND STATE OF THE SHASTRY-SUTHERLAND LATTICE WITH CLASSICAL HEISENBERG SPINS.

4. 3rd International Conference for Young Scientists "Low Temperature Physics", 14-18 May 2012, Kharkiv, Ukraine

Oral: A.G. Grechnev, A.S. Kovalev, and M.L. Pankratova,

Field dependence for magnetization of a ferro/antiferromagnet bilayer with exchange bias in the framework of continual model

5. 3rd International Conference on Nonlinear Dynamics, 21-24 September 2010, Kharkiv, Ukraine

Oral: A.G. Grechnev, A.S. Kovalev, and M.L. Pankratova,
Hysteresis phenomenon in ferro/antiferro layered system

6. 1st International Conference for Young Scientists "Low Temperature Physics", 7-11 June 2010, Kharkiv, Ukraine

Oral: A.G. Grechnev, A.S. Kovalev, and M.L. Pankratova,
Exchange bias problem in finite-dimensional system

7. International conference "Dynamics and structure in physics and chemistry", 25-28 May 2009, Kharkiv, Ukraine

Poster: A.G. Grechnev, A.S. Kovalev, and M.L. Pankratova,
Exchange bias of the field dependence of the magnetization in the two-layered ferromagnet model

8. CC-2008: 7th International Conference on Cryocrystals and Quantum Crystals, 31 Jul - 5 August 2008, Wroclaw, Poland

Oral: Yu. A. Freiman, Alexander F. Goncharov, S. M. Tretyak, A. Grechnev, John S. Tse, D. Errandonea, Ho-kwang Mao, and Russell J. Hemley
Raman scattering and lattice distortion of hcp rare gas solids under pressure

9. Multi-scale Modelling: Electrons, Molecules and (Bio)Materials, April 2006, Amsterdam, The Netherlands.

Poster: A. Grechnev, M.I. Katsnelson, A.I. Lichtenstein, O. Eriksson and J.M. Wills.
Dynamical mean-field studies of transition metals: bulk and surface.

10. FOM-Decemberdagen, December 2005, Veldhoven, The Netherlands.

Oral: A. Grechnev, M.I. Katsnelson, A. Lichtenstein, O. Eriksson and J.M. Wills.
Dynamical mean-field studies of transition metals: bulk and surface.

11. ICM 2003: International Conference in Magnetism, July 2003, Rome, Italy.

Poster: A. Grechnev, M. Katsnelson and O. Eriksson.
Self-consistent spin wave theory of 2D quantum Heisenberg magnets with dipole-dipole interaction

12. Ψ_K -2000: Ab initio (from electronic structure) calculation of complex processes in Materials,
August 2000, Schwäbisch Gmünd, Germany.
Poster: A. Grechnev, R. Ahuja and O. Eriksson.
Magneto-optical Kerr effect in Fe/Au superlattices: theory.
13. NATO ASI: Frontiers in Magnetism of Reduced Dimension Systems,
May-June 1997, Partenit, Ukraine.
Poster: A.G. Grechnev, A.S. Kovalev.
Spin wave localization near ferro-antiferromagnet interface.
14. Condensed Matter Physics (3d international conference), January 1997,
Kharkiv, Ukraine.
Oral: A.G. Grechnev, A.S. Kovalev.
Magnetic structure and spin waves near ferro-antiferromagnet interface.