



Vladislav A. Yastrebov

CNRS Research Scientist

Born on February 20th, 1984 in St Petersburg, Russia

Centre des Matériaux, MINES ParisTech, CNRS UMR 7633

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Professional experience

- Oct 2013
present
CNRS Research Scientist
MINES ParisTech, Centre des Matériaux (Évry)
Subjects: Mechanics and Physics of contact and friction at small scales
- Apr 2012
Sept 2013
Postdoctoral fellow
MINES ParisTech, Centre des Matériaux (Évry)
Subjects: Contact mechanics. Coupling Discrete Dislocation Dynamics with the Finite Element Method. Indentation
Advisers: Georges Cailletaud, Frédéric Feyel
- Feb 2011
Mar 2012
Postdoctoral fellow
École Polytechnique Fédérale de Lausanne, Computation Solid Mechanics Laboratory
Subject: Research on the origin of friction
Adviser: Jean-François Molinari
- Apr 2006
Sept 2007
Research scientist, Corning Scientific Center, St-Petersburg
Subject: optimization of heating and cooling schedules for ceramic structures
Analytical and numerical nonlinear computations, finite element analysis.
- Jan 2003
Apr 2006
Participation in projects of Strength of Materials Department
St Petersburg Polytechnical University
Analytical and finite element analysis, experimental work,
participation in development of a finite element code.

Education

- Mar 2011
Ph.D. in Mechanics
MINES ParisTech, Centre des Matériaux
Thesis: *Computational contact mechanics: geometry, detection and numerical techniques*
Thesis advisers: Georges Cailletaud, Frédéric Feyel
- June 2007
June 2005
Master of Science in Applied Mechanics (honorable mention)
Bachelor of Science in Applied Mechanics (honorable mention)
St Petersburg Polytechnical University, Department of Physics and Mechanics
MSc thesis: *Continuum damage mechanics: phenomenological description and simulation of damage accumulation in quasi-brittle materials*
BSc thesis: *Continuum damage mechanics: numerical simulations using coupled approach*
Theses advisers: Artem S. Semenov, Boris E. Melnikov
- June 2001
High School
Saint-Petersburg Lyceum of Physics and Mathematics FML 239, Russia
Alumni: G. Perelman and S. Smirnov (Fields medals 2006, 2010)

Research interests

Computational Mechanics. Multiscale and multiphysics in mechanics of materials. Mechanics and physics of contact and friction. Computational tribology. Surface roughness. Damage Mechanics. Finite and Boundary Element Methods. Discrete Dislocation Dynamics. Monte-Carlo simulations. Molecular Dynamics. High Performance Computing.

Computer skills

Finite element software:	ANSYS, ABAQUS, ZéBuLoN, Gmsh, PANTOCRATOR, Akantu
Molecular dynamics software:	LAMMPS
Programming:	C/C++, Fortran, Python, JavaScript, shell script, DHTML/XML
HPC :	MPI, OpenMP, CUDA
Mathematical software:	MATLAB, Maple, Mathcad, Mathematica
CAD and 3D visualization:	SolidWorks, AutoCAD, 3D Studio Max
Other:	L ^A T _E X, Beamer, Gnuplot, ParaView, Inkscape, office, etc.

Teaching at MINES ParisTech

- “Finite Element Method”, tutor of mini-projets, 2008-2010.
- “Nonlinear computational mechanics”, tutor of mini-projets and lecturer*, 2009, 2014*.
- “Short course on contact mechanics and tribology”, tutor of mini-projets and lecturer, 2010.
- “Mechanics of solid materials”, tutor of mini-projets, 2013-2014.

Management activities

- 2013-present: Organizer of “Club Rama”: bimonthly meeting of users of the cluster
- 2013-present: Responsible for CoCaS’ web-page

Invited lectures

- “Parallel treatment of contact problems”, at LaMSID, CNRS-EDF-CEA, Clamart, 28 June 2011.
- “Some recent developments in computational contact mechanics”, Colloque CSMA, Giens, 16 May 2012.
- “Computational contact mechanics with finite elements”, at LMT, ENS, Cachan, 5 December 2013.
- “Mechanics of contact between rough surfaces”, at TriboLab, Politecnico di Bari, Italy, 29 January 2014.
- “Mechanics of contact between rough surfaces”, at LaMSID, CNRS-EDF-CEA, Clamart, 20 March 2014.

Scientific stay

- TriboLab, Politecnico di Bari, Italie, January 2014.
- Computational Solid Mechanics Laboratory, EPFL, Lausanne, Switzerland, February 2014.

Awards

- Prix Paul Caseau, Academy of Technology and EdF, France, 2012.
- Finalist in the selection for the ECCOMAS PhD award, 2012.
- PhD award, The French Computational Structural Mechanics Association (CSMA), 2012.
- Government grant for the best master theses, 2006-2007.
- Leonard Euler’s Stipendium Grant (DAAD) in damage mechanics of quasi-brittle materials, 2004-2005.
- Participation in National Olympiad on Strength of Materials, Saransk, Russia, 2003.
- 1st place in St Petersburg Olympiad on Strength of Materials, St Petersburg, Russia, 2003.

Publications

Books

[1] V. A. Yastrebov, *Numerical Methods in Contact Mechanics*, ISTE/Wiley, 2013.

Publications in refereed journals

[1] V. A. Yastrebov, G. Ancaux, J.-F. Molinari *From infinitesimal to full contact between rough surfaces: evolution of the contact area*, submitted (2014).

arXiv: arxiv.org/abs/1401.3800

[2] V. A. Yastrebov, M. Fischlschweiger, G. Cailletaud, T. Antretter *The role of phase interface energy in martensitic transformations: a lattice Monte-Carlo simulation*, *Mechanics Research Communications*, 56 : 37–41 (2014).

doi: [10.1016/j.mechrescom.2013.11.006](https://doi.org/10.1016/j.mechrescom.2013.11.006), arXiv: arxiv.org/abs/1401.5510

[3] D.S. Kammer, V. A. Yastrebov, G. Ancaux, J.-F. Molinari *The existence of a critical length scale in regularised friction*, *Journal of the Mechanics and Physics of Solids*, 63 : 40–50 (2014).

doi: [10.1016/j.jmps.2013.10.007](https://doi.org/10.1016/j.jmps.2013.10.007), arXiv: arxiv.org/abs/1402.3043

[4] A. M. Aragon, V. A. Yastrebov, J.-F. Molinari *A constrained-optimization methodology for the detection phase in contact mechanics simulations*, *International Journal for Numerical Methods in Engineering*, 96(5) : 323–338 (2013).

doi: [10.1002/nme.4561](https://doi.org/10.1002/nme.4561)

[5] P. A. Sabnis, S. Forest, N. K. Arakere, V. A. Yastrebov *Crystal plasticity analysis of cylindrical indentation on a Ni-base single crystal superalloy*, *International Journal of Plasticity*, 51 : 200–217 (2013).

doi: [10.1016/j.ijplas.2013.05.004](https://doi.org/10.1016/j.ijplas.2013.05.004)

[6] V. A. Yastrebov, G. Ancaux, J.-F. Molinari, *Contact between representative rough surfaces*, *Physical Review E*, 86(3) : 035601+(R) (2012).

doi: [10.1103/PhysRevE.86.035601](https://doi.org/10.1103/PhysRevE.86.035601), arXiv: arxiv.org/abs/1207.5364

[7] D. S. Kammer, V. A. Yastrebov, P. Spijker, J.-F. Molinari, *On the propagation of slip fronts at frictional interfaces*, *Tribology Letters*, 48(1) : 27–32 (2012).

doi: [10.1007/s11249-012-9920-0](https://doi.org/10.1007/s11249-012-9920-0), arXiv: arxiv.org/abs/1107.6025

[8] V. A. Yastrebov, G. Cailletaud, F. Feyel, *A local contact detection technique for very large contact and self-contact problems: sequential and parallel implementations*, in G. Zavarise and P. Wriggers, ed., *Trends in Computational Contact Mechanics ser. Lect. Notes Appl. Comput. Mech.*, 58 : 227–251 (2011).

doi: [10.1007/978-3-642-22167-5_13](https://doi.org/10.1007/978-3-642-22167-5_13)

[9] V. A. Yastrebov, J. Durand, H. Proudhon, G. Cailletaud, *Rough surface contact analysis by means of the Finite Element Method and of a new reduced model*, *Comptes Rendus Mécanique*, 339 : 473–490 (2011).

doi: [10.1016/j.crme.2011.05.006](https://doi.org/10.1016/j.crme.2011.05.006)

Personal information

Language skills:

Russian (mother tongue), English (proficient in spoken and written), French (proficient in spoken and competent in written).

Sports:

badminton, tennis, rock climbing.

Hobbies:

photography, astronomy.

Personal:

married, two children.