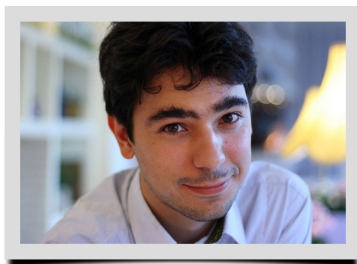


C U R R I C U L U M V I T A E



Vladislav A. Yastrebov

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ORCID: [0000-0002-4052-3557](https://orcid.org/0000-0002-4052-3557) *ResearcherID:* [A-4293-2015](https://pubs.acs.org/doi/10.26434/chemrxiv-2015-a-4293)

• Professional experience

- Oct 2013 **CNRS Research Scientist**
present MINES ParisTech, Centre des Matériaux (Évry, France)
Project: “Contact and friction between surfaces with microstructure”
Mechanics and physics of contact and friction, numerical methods, micro plasticity
- Apr 2012 **Postdoctoral fellow**
Sept 2013 MINES ParisTech, Centre des Matériaux (Évry, France)
Topic: coupling discrete dislocation dynamics with the finite element method
Advisers: Georges Cailletaud, Frédéric Feyel
- Feb 2011 **Postdoctoral fellow**
Mar 2012 EPFL, Computation Solid Mechanics Laboratory (Lausanne, Switzerland)
Topic: Research on the origin of friction (*ERCstg UFO-240332*)
Adviser: Jean-François Molinari
- Apr 2006 **Researcher, Corning Scientific Center** (St-Petersburg, Russia)
Sept 2007 Subject: optimization of heating and cooling schedules for ceramic structures.

• 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
- Jun 2007 **Master of Science in Applied Mechanics (honorable mention)**
Jun 2005 **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 numerical 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
- Jun 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

Solid mechanics. Numerical methods. Mechanics and physics of contact and friction. Multiscale and multiphysical mechanics of materials. Computational tribology. Surface roughness. Nonlinear dynamics. Architected materials. Damage Mechanics. Phase transformations. Finite and Boundary Element Methods. Discrete Dislocation Dynamics. Molecular Dynamics. Monte-Carlo simulations. High Performance Computing.

• Awards and distinctions

- Ranked 1st among ≈ 100 candidates in CNRS concours for research scientist position, 2013.
- [Prix Paul Caseau for the best PhD thesis in Modeling and Numerical Simulations](#) Academy of Technology and Electricité de France, 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 best master theses, 2006-2007.
- Leonard Euler's Stipendium (DAAD) in damage mechanics of quasi-brittle materials, 2004-2005.
- Participation in National Olympiad in Strength of Materials, Saransk, Russia, 2003.
- 1st place in St Petersburg Olympiad in Strength of Materials, St Petersburg, Russia, 2003.

• Teaching

At MINES ParisTech

- “Finite Element Method”, tutor of mini-projets, 2008-2010.
- “Nonlinear computational mechanics”, tutor of mini-projets and lecturer*, 2009, since 2014*.
- “Short course on contact mechanics and tribology”, tutor of mini-projets and lecturer, 2010.
- “Mechanics of solid materials”, tutor of experimental mini-projets, since 2013.
- “Continuum solid mechanics”, tutor, since 2015.
- “Models and Methods in Mechanics and Physicochemistry”, lecturer and tutor, master course, since 2016.
- “Contact Mechanics and Elements of Tribology”, lecturer and tutor, master course, since 2016.

Exterior

- “Contact Mechanics and Elements of Tribology”, lecturer, master course, St Petersburg Polytechnic University, Russia, April 2016.

• Institutional responsibilities

- 2013-present: Organizer of “Club Rama”: bimonthly meeting of users of the computer cluster.
- 2013-present: Responsible for research group's [web-page](#).
- 2014-present: Member of the PhD recruitment committee.

• Scientific stays

- Exchange student (DAAD program), TU Dresden, Germany, (1 month) December 2004.
- Invited scholar, TriboLab, Politecnico di Bari, Italy, (1 week) January 2014.
- Invited scholar, Computational Solid Mechanics Laboratory, EPFL, Switzerland, (1 month) 2014, (1 month) 2015.

• Organization of conferences, symposia, seminars

- “Alan Needleman 70s Symposium”, Ecole des Mines, Paris, France, August 2014.
- ★ “Micro/Nanoscale Modelling for Tribology”, CECAM-Lorentz Workshop, University of Groningen, Netherlands, January 2017.
- ★ French-German-Russian Seminar on Advances in Mechanics, Ecole des Mines, Paris, France, Spring 2017.

• External committees

Licentiate thesis: Francesc Pérez Ràfols “Modelling and Numerical Analysis of Leakage Through Metal-to-Metal Seals” (April 14, 2016, Luleå University of Technology, Luleå, Sweden)

Master project: Benjamin Paccaud “Elasto-plastic normal contact between representative rough surfaces” (July 14, 2015, EPFL, Switzerland)

• Review activities

Journals (48):

ASME Journal of Tribology (5), Tribology International (5), Physical Review Letters (4), Physical Review E (3), Computer Methods in Applied Mechanics and Engineering (3), Tribology Letters (2), Meccanica (2), Wear (2), Journal of Engineering Tribology (2), Mechanics and Industry (2), Metallurgical Research and Technology (2), International Journal for Numerical Methods in Engineering (1), International Journal of Solids and Structures (1), Modelling and Simulation in Materials Science and Engineering (1), Smart Materials and Structures (1), Zeitschrift fur Angewandte Mathematik und Mechanik (1), Applied Sciences (1), Holm Conference on Electric Contact (1), Computational Mechanics (1), Journal of Engineering Mechanics (1), Applied Surface Science (1), Tribology Transactions (1), MDPI Machines (1), The Journal of Strain Analysis for Engineering Design (1), Surface Review and Letters (1), SAGE Journal of Mechanical Engineering Science (1), Biomimetics (1)

Professorship reviews: Swiss National Science Foundation (1)

Research proposals: Hungarian Scientific Research Fund OTKA (1)

Conference scientific committees: CSMA conference, Giens, May 2015; CSMA conference, Giens, May 2017

• Supervision

Internship students:

- Olga Trubienko (MINES, 2008), Computational Contact Mechanics.
- Olga Zinovieva (MINES, 2012), Plasticity induced Roughness.
- Fadoua Majid (MINES & Schneider, 2015-2016), Electric contactors.

Co-supervision of graduate students:

- Julian Durand (MINES, 2009-2010), Elasto-plastic rough contact.
- David S. Kammer (EPFL, 2011-2012), Dynamic sliding.
- Dmitry Tkalic (MINES & NTNU, Norway, 2012-2016), Wear of drilling tools.
- Amandine Sergeant-Boy (IPGP, Paris, 2013-2016), Glacial earthquakes.
- Matti Lindroos (TUT & TWC, Finland, 2014), Thermo-mechano-metallurgical wear model.
- Basava R. Akula (MINES & Safran, 2015-2018), Parallel mortar-based contact algorithms.
- Robin Lethiecq (MINES & CEA-Leti, 2015-2018), Textile embedded chip on wire.
- Takahiro Sakimoto (MINES, 2015-2017), Modeling DWTT for high-strength steels.
- Andrei Shvarts (MINES, 2015-2018), Fully coupled lubricated thermo-mechanical contact.
- Paolo Cinat (IMT Lucca, Italy, 3 months stay, 2016), Sealing problems.

Co-supervision of postdoctoral fellows:

- Ming Liu (MINES, 2012-2013), Indentation analysis.
- Ayaovi Dzifa Kudawoo (MINES, 2012-2013), Computational contact.
- Frederick S. Mballa Mballa (LaSIPS: MINES & SUPELEC, 2013-2015), Electric contact.

• Major collaborations

- Mechanics of rough contact: G. Anciaux, J.F. Molinari (EPFL, Lausanne, Switzerland)
- Microplasticity: G. Cailletaud, S. Forest, H. Proudhon (MINES, France)
- Electric contact: S. Noël, F. Houzé (Supelec, France)
- Computational contact: F. Feyel, N. Rakotomalala, J. Vignollet (Safran-Tech, France)
- Glacial earthquakes: A. Mangeney (IPGP, Paris, France), O. Castelnaud (ENSAM-Paris, France)
- Friction dynamics: D.S. Kammer (Cornell University, USA)
- Martensitic transformations: T. Antretter (MUL, Leoben, Austria)

• Skills and personal information

Computer skills: C/C++, MPI, OpenMP, Python, FEA and CAE software.

Language skills: Russian (mother tongue), English (proficient), French (proficient).

Hobbies: photography \cup astronomy, tennis, rock climbing.

Personal: married and have two wonderful boys.

• Invited talks

- **“Contact between rough surfaces: mechanical and transport phenomena at small scales”**
ICTAM 2016: 24th International Congress of Theoretical and Applied Mechanics, Montreal, Canada, August 26, 2016.
- **“Contact between rough surfaces: mechanical and transport phenomena”**
Department of Engineering Sciences and Mathematics, Luleå University of Technology, LTU, Luleå, Sweden, April 13, 2016.
- **“Mechanical contact between rough elastic-plastic solids: scale effect in deformation of asperities”**
Society of Engineering Science (SES) Technical Meeting, Texas A&M University, USA, October 27, 2015.
- **“Mechanics and physics of rough contact”** [\[link\]](#)
Fédération Francilienne de Mécanique, Arts et Métiers ParisTech, Paris, France, May 7, 2015.
- **“Computational contact mechanics: engineering approach”**
Centre de Mise en Forme des Matériaux, MINES ParisTech, Sophia-Antipolis, France, April 21, 2015.
- **“A numerical study of the contact between rough surfaces: mechanical and transport phenomena at small scales.”** [\[abstract\]](#)
Seismology lab, Institut de Physique du Globe de Paris, France, November 25, 2014.
- **“Sealing and percolation of rough surfaces: focus on contact mechanics”** [\[pdf\]](#)
Workshop “Predictive approach to sealing”, Paris, France, October 13, 2014.
- **“Mechanics of contact between rough surfaces”** [\[pdf\]](#)
Laboratoire de Mécanique des Structures Industrielles (LaMSID), CNRS-EDF-CEA, Clamart, France, March 20, 2014.
- **“Mechanics of elastic and elasto-plastic contact between rough surfaces”** [\[link\]](#)
TriboLab, Politecnico di Bari, Italy, January 29, 2014.
- **“Computational contact mechanics with finite elements”** [\[abstract\]](#)
Laboratoire de Mécanique et Technologie (LMT), ENS Cachan, France, December 5, 2013.
- **“Some recent developments in computational contact mechanics”** [\[abstract\]](#)
Colloquium of the French Computational Structural Mechanics Association (CSMA), Giens, France, May 16, 2013.
- **“Computational Contact Mechanics: geometry, detection and numerical techniques”**
PhD Olympiad, ECCOMAS Young Investigators Conference, Aveiro, Portugal, April 25, 2012.
- **“Parallel treatment of contact problems”** [\[abstract\]](#)
Laboratoire de Mécanique des Structures Industrielles (LaMSID), CNRS-EDF-CEA, Clamart, France, June 28, 2011.

• Publications in peer-reviewed journals (13+2)

[1] 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. Lecture Notes in Applied and Computational Mechanics, 58:227–251 (2011). doi: [10.1007/978-3-642-22167-5_13](https://doi.org/10.1007/978-3-642-22167-5_13)

[2] 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 Mecanique, 339:473–490 (2011). doi: [10.1016/j.crme.2011.05.006](https://doi.org/10.1016/j.crme.2011.05.006)

[3] D.S. Kammer, V.A. Yastrebov, P. Spijker, J.F. Molinari, *On the propagation of slip fronts at frictional interfaces*, Tribology Letters, 48:27–32 (2012). doi: [10.1007/s11249-012-9920-0](https://doi.org/10.1007/s11249-012-9920-0),

- [4] V.A. Yastrebov, G. Anciaux, J.F. Molinari, *Contact between representative rough surfaces*, Physical Review E, 86:035601 (2012). doi: [10.1103/PhysRevE.86.035601](https://doi.org/10.1103/PhysRevE.86.035601), arXiv: arxiv.org/abs/1207.5364
- [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] 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, 96:323–338 (2013). doi: [10.1002/nme.4561](https://doi.org/10.1002/nme.4561)
- [7] D.S. Kammer, V.A. Yastrebov, G. Anciaux, 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
- [8] 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
- [9] V.A. Yastrebov, G. Anciaux, J.F. Molinari, *The contact of elastic regular wavy surfaces revisited*, Tribology Letters, 56:171–183 (2014). doi: [10.1007/s11249-014-0395-z](https://doi.org/10.1007/s11249-014-0395-z), arXiv: arxiv.org/abs/1405.2252
- [10] V.A. Yastrebov, G. Anciaux, J.F. Molinari, *From infinitesimal to full contact between rough surfaces: evolution of the contact area*, International Journal of Solids and Structures, 52:83–102 (2015). doi: [10.1016/j.ijsolstr.2014.09.019](https://doi.org/10.1016/j.ijsolstr.2014.09.019), arXiv: arxiv.org/abs/1401.3800
- [11] V.A. Yastrebov, G. Cailletaud, H. Proudhon, F.S. Mballa Mballa, S. Noël, Ph. Testé, F. Houzé. *Three-level multi-scale modeling of electrical contacts sensitivity study and experimental validation*. In Electrical Contacts (Holm), 2015 IEEE 61st Holm Conference, 414-422 (2015). doi: [10.1109/HOLM.2015.7355130](https://doi.org/10.1109/HOLM.2015.7355130)
- [12] V.A. Yastrebov, *Sliding without slipping under Coulomb friction: opening waves and inversion of frictional force*, Tribology Letters, 62(1):1–8 (2016). doi: [10.1007/s11249-016-0650-6](https://doi.org/10.1007/s11249-016-0650-6), arXiv: arxiv.org/abs/1507.07334
- [13] B.L. Boyce, S.L.B. Kramer, T.R. Bosiljevac, E. Corona, ..., V. Chiaruttini, M. Mazière, S. Feld-Payet, V.A. Yastrebov, J. Besson, J.L. Chaboche, ..., *The Second Sandia Fracture Challenge: Predictions of Ductile Failure under Quasi-Static and Moderate-Rate Dynamic Loading*, International Journal of Fracture, 198(1):5-100 (2016). doi: [10.1007/s10704-016-0089-7](https://doi.org/10.1007/s10704-016-0089-7)
- [14] V.A. Yastrebov, *Fluid flow across a wavy channel brought in contact: weak and strong couplings of solid and fluid equations*, submitted, 2016.
- [15] D. Tkalich, G. Cailletaud, V.A. Yastrebov, A. Kane, *A micromechanical constitutive modeling of WC hardmetals using finite-element and uniform field models*, submitted, April 2016.

• Research monographs

- [1] V. A. Yastrebov, *Numerical Methods in Contact Mechanics*, ISTE/Wiley, 400 pages, 2013. Including a 60 pages Appendix on a new tensor algebra.

• Conferences

1. 38th Conference Control Processes and Stability 2007, Saint-Petersburg, Russia, 9-12 April (2007), oral presentation
2. 9e Colloque National en Calcul des Structures, Giens, France, 25-29 May (2009), poster presentation
3. 1st International Conference on Computational Contact Mechanics, Lecce, Italy, 16-18 September (2009), oral presentation
4. IV European Conference on Computational Mechanics, Paris, France, 16-21 May (2010), oral presentation

5. 10eme Colloque National en Calcul des Structures, Giens, France, 9-13 May (2011), oral presentation
6. CECAM: Brittle Fracture at the Atomic Scale, EPFL Lausanne, Switzerland, 16-19 May (2011)
7. Materials Deformation: Fluctuations, Scaling, Predictability, Les Houches, France, 22-27 January (2012), poster presentation
8. EuroMech: New trends in Contact Mechanics, Cargèse, France, 26-31 March (2012), oral presentation
9. ECCOMAS Young Investigators Conference, Aveiro, Portugal, 24-27 April (2012), invited talk
10. 24 Journées Internationales Francophones de Tribologie, Aix-en-Provence, France, 9-11 May (2012), oral presentation
11. Colloque Plasticité, Paris, France, 17-19 April (2013), poster presentation
12. 11e Colloque CSMA, Giens, France, 13-17 May (2013), oral presentation + invited talk
13. 3rd International Conference on Computational Contact Mechanics, Lecce, Italy, 10-12 July (2013), oral presentation
14. 20e Congrès Français de Mécanique, Bordeaux, France, 27-30 August (2013), oral presentation
15. 40th Leeds-Lyon Symposium on Tribology, Lyon, France, 4-6 September (2013), oral presentation
16. Contact Mechanics International Symposium (CMIS), Abu-Dhabi, United Arab Emirates, 3-5 February (2014)
17. 20th European Conference on Fracture, Trondheim, Norway, 30 June-4 July (2014), oral presentation
18. 11th World Congress on Computational Mechanics, Barcelona, Spain, 20-25 July (2014), oral presentation
19. 7th International Conference on Multiscale Materials Modeling, Berkeley, USA, 6-10 October (2014)
20. Predictive approach of sealing, Paris, France, 13 October (2014), invited talk
21. International Workshop on Dislocation Dynamics Simulations, Saclay, France, December 10-12 (2014), poster presentation
22. 18e Rencontre du Non-Linéaire, Paris, France, 17-19 March (2015), poster presentation
23. Contact mechanics and coupled problems in surface phenomena, Lucca, Italy, 30 March - 2 April (2015), oral presentation
24. IV International Conference on Computational Contact Mechanics, Hannover, Germany, 27-29 May (2015), oral presentation
25. 9th European Solid Mechanics Conference, Madrid, Spain, 6-10 July (2015), oral presentation
26. 42nd Leeds-Lyon Symposium on Tribology, Lyon, France, 6-9 September (2015), oral presentation
27. 52nd SES technical meeting, Texas A&M, College Station, TX, USA, 24-27 October, 2015, invited presentation
28. CMIS 2016: Contact Mechanics International Symposium, Warsaw, Poland, 11-13 May, 2016, oral presentation
29. ICTAM 2016: 24th International Congress of Theoretical and Applied Mechanics, Montreal, Canada, 21-26 August 2016, invited presentation.