



## C U R R I C U L U M   V I T A E

**Vladislav A. Yastrebov**

**CNRS Research Scientist in Solid Mechanics**

*MINES ParisTech, PSL University*

*Centre des Matériaux, CNRS UMR 7633, Évry, France*

*E-mail:* [vladislav.yastrebov@mines-paristech.fr](mailto:vladislav.yastrebov@mines-paristech.fr)

*Web-page:* [www.yastrebov.fr](http://www.yastrebov.fr)   [HAL](#) [ORCID](#) [arXiv](#) [in](#) [t](#)

### Professional experience

- Oct 2013      **CNRS Research Scientist**  
present      MINES ParisTech, Centre des Matériaux (Évry, France)  
Mechanics and physics of contact and friction, computational mechanics
- 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, Computational Solid Mechanics Laboratory (Lausanne, Switzerland)  
Topic: Research on the origin of friction (*ERCstg UFO-240332*)  
Adviser: Jean-François Molinari
- Apr 2006      **Engineer, 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 Polytechnic 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 and fluid mechanics, numerical methods, mechanics and physics of contact and friction, multi-scale and multiphysical mechanics of materials, computational tribology, surface roughness, nonlinear dynamics, architected materials, finite and boundary element methods

## Awards and distinctions

- CNRS Bronze Medal, 2018.
- Prix Paul Caseau for the best PhD thesis in Modeling and Numerical Simulations Academy of Technology and Electricité de France, France, 2012.
- PhD award, The French Computational Structural Mechanics Association (CSMA), 2012.
- Finalist in the selection for the ECCOMAS PhD award, 2012.
- CNRS “Prime d’Encadrement Doctoral et de Recherche”, 2016-2020, 2020-2024.
- Government grant for best master theses, St Petersburg, Russia, 2006-2007.
- Leonard Euler’s Stipendium (DAAD), Dresden, Germany, 2004-2005.
- Participation in National Olympiad in Strength of Materials, Saransk, Russia, 2003.
- 1<sup>st</sup> place in St Petersburg Olympiad in Strength of Materials, St Petersburg, Russia, 2003.

## Teaching

*Currently taught at MINES ParisTech*

- “Contact Mechanics and Elements of Tribology”, lecturer and tutor, 1 week open master/doctoral course, since 2016 (24-30h).
- “Multiscale Simulations of Materials and Structures”, lecturer and tutor, 1 week open master/doctoral course, since 2016 (8h).
- “Continuum Solid Mechanics”, for 1st year students at MINES ParisTech, tutor, since 2015 (16h).
- ‘Nonlinear Computational Mechanics’, tutor of mini-projects and lecturer\*, 2009, since 2014\* (2-3h).

*Taught in the past at MINES ParisTech*

- “Finite Element Method”, tutor of mini-projects, 2008-2010.
- “Short Course on Contact Mechanics and Tribology”, tutor of mini-projects and lecturer, Wemesurf network, 2010.
- “Mechanics of Solid Materials”, tutor of experimental mini-projects, since 2013.
- “Computational Approach to Micromechanical Contacts”, lecturer and tutor, 1 week special course, 2017.

*Taught in the past elsewhere*

- “Contact Mechanics and Elements of Tribology”, lecturer, master course, St Petersburg Polytechnic University, Russia, April 2016 (18h).

## Institutional and other responsibilities

- 2021: Member of the CSMA PhD award committee
- 2020: Swedish Research Council, member of the review panel Mechanical Engineering
- 2020-present: Technical Editor at **JTCAM**
- 2017-present: Co-founder of the first Overlay Journal in Mechanics **JTCAM**
- 2017-present: Member of the **committee CSMA Juniors**, The French Association for Computational Mechanics, junior section (under 40)
- 2013-2018: Organizer of “Club Rama”: bimonthly meeting of users of the computer cluster.

## Scientific stays

- Visiting scholar, Cornell University, October 2018.
- Guest at Peterhouse, University of Cambridge, February 2017.
- Invited scholar, Computational Solid Mechanics Laboratory, EPFL, Switzerland, (1 month) 2014, (1 month) 2015.
- Invited scholar, TriboLab, Politecnico di Bari, Italy, (1 week) January 2014.
- Exchange student (DAAD program), TU Dresden, Germany, (1 month) December 2004.

## External committees

*Examinator, Assistant Professor position (Maître de conférence)*

- INSA-Lyon, laboratory LaMCoS, Spring 2021

*Examinator/reporter, PhD defense jury*

- **Jacopo Bonari** “Novel Interface Discretisation Methods for Contact Mechanics” (reporter, May 21, 2021, IMT-Lucca, Italy) PhD advisers: M. Paggi & A. Popp
- **Mohit Pundir** “A new view on the fundamentals of shear transfer through cracks in concrete via interface roughness at different scales” (reporter, Feb 5, 2021, EPFL, Switzerland) PhD adviser: G. Ancaux
- **Soha Baydoun** “Investigation of fretting wear of a flat-on-flat 34NiCrMo16 interface: Application and modelling of the contact oxygenation concept” (Nov 12, 2020, École Centrale de Lyon, France) PhD advisers: S. Fouvry, S. Descartes
- **Dimitri Bălăsoiu** “Modelling and simulating the mechanical behavior of ice floes” (Oct 13, 2020, Laboratory Jean Kuntzmann, Université Grenoble Alpes, France) PhD advisers: J. Weiss, S. Labbé

*PhD monitoring committee*

- **Kofi E. Agode** “Analysis and Modeling of Wear Behavior of Cutting Tools for Hard Superalloys” (Sept 8, 2019, LEM3, University of Lorraine, France), PhD advisers: C. Wolff, M. Nouari.

*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), PhD adviser: A. Almqvist.

*Master projects*

- **Ilyass El Yamani** “Prediction of the service life of the blade-disk assemblies of aircraft engines in fretting-fatigue under complex loads” (2021, master Magis, ENS Paris-Saclay, France), advisers: S. Pommier, Y. Guilhem.
- **Benjamin Paccaud** “Elasto-plastic normal contact between representative rough surfaces” (July 14, 2015, EPFL, Switzerland), adviser: J.F. Molinari.

## Organization of conferences, symposia, seminars

- CSMA-GAMM Junior Workshop, in the framework of WCCM 2020, Paris, France, January 2021
- 3rd CSMA Workshop for young researchers, Giens, France, May 2019
- 2nd CSMA Workshop for young researchers, Gif-sur-Yvette, France, March 2018
- 1st CSMA Workshop for young researchers, Giens, France, May 2017
- Micro/Nanoscale Modelling for Tribology, CECAM-Lorentz Workshop, Leiden, Netherlands, January-February 2017
- Alan Needleman 70s Symposium, Ecole des Mines, Paris, France, August 2014

## Review activities

**Journals (126):**

Physical Review E (12), Tribology Letters (9), **International Journal of Solids and Structures** (9), Tribology International (9), **Physical Review Letters** (7), Journal of Engineering Tribology (7), ASME Journal of Tribology (7), Meccanica (5), **Computer Methods in Applied Mechanics and Engineering** (5), Nonlinear Dynamics (4), Wear (4), **Journal of the Mechanics and Physics of Solids** (3), Physical Review B (3), **International Journal for Numerical Methods in Engineering** (3), Advanced Modeling and Simulation in Engineering Sciences (2), Mechanics and Industry (2), Metallurgical Research and Technology (2), Physical Review Materials (2), Journal of Nuclear Materials (2), MDPI Applied Sciences (2), Modelling and Simulation in Materials Science and Engineering (2), Computational Mechanics (1), Scientific Reports (1), Journal of Engineering Mechanics (1), Applied Surface Science (1), Tribology Transactions (1), MDPI Metals (1), MDPI Machines (1), Zeitschrift fur

Angewandte Mathematik und Mechanik (1), Computational Materials Science (1), MDPI Materials (1), Journal of the Mechanical Behavior of Biomedical Materials (1), Journal of Mechanics of Materials and Structures (1), The Journal of Strain Analysis for Engineering Design (1), Surface Review and Letters (1), SAGE Journal of Mechanical Engineering Science (1), Applied Physics (1), Materials Research Letters (1), ASME Journal of Applied Mechanics (1), Computers and Structures (1), Friction (1), International Journal of Applied Mechanics (1), Smart Materials and Structures (1), The Journal of Adhesion (1), Biomimetics (1), Industrial Lubrication and Tribology (1)

**Professorship reviews:** Swiss National Science Foundation (2)

**Research proposals:** Hungarian Scientific Research Fund OTKA (1), NWO, Netherlands Organisation for Scientific Research (1)

**Conference paper reviews:** 21st International Conference on Wear of Materials 2017 (1), IEEE Holm Conference on Electric Contact 2016 (1)

**Conference scientific committees (4):** CSMA conference, Giens, Editions 2015, 2017, 2019 Contact Mechanics International Symposium 2020, Chexbres, Switzerland.

## Supervision

**Internship students:**

- **Olga Trubienko** (MINES, 2008), Computational Contact Mechanics (master), with G. Cailletaud.
- **Olga Zinovieva** (MINES, 2012), Plasticity induced Roughness (master), with G. Cailletaud.
- **Fadoua Majid** (MINES & Schneider, 2015-2016), Electric contactors (master), with G. Cailletaud & V. Esin.
- **Amine Saidi** (MINES & Safran Tech, 2018-2019), Simulation of fretting wear (master), with S. Basseville & J. Vignollet.
- **Yirun Zou** (MINES, 2019), Machine learning for non-linear dynamics (undegraduate).
- **Paul Beguin** (MINES, 2020), Iceberg-glacier dynamics (master).

**Co-supervision of graduate students:**

- **Julian Durand** (MINES, 2009-2010), Elasto-plastic rough contact, with G. Cailletaud & H. Proudhon.
- **David S. Kammer** (EPFL, 2011-2012), Dynamic sliding, with J.F. Molinari & P. Spijker.
- **Dmitry Tkalic** (MINES & NTNU, Norway, 2012-2016), Wear of drilling tools, with G. Cailletaud, Ch. C. Li, A. Kane.
- **Amandine Sergeant-Boy** (IPGP, Paris, 2013-2016), Glacial earthquakes, with A. Mangeney, O. Castelnau, P. Montagner, E. Stutzmann.
- **Matti Lindroos** (TUT & TWC, Finland, 2014), Thermo-mechano-metallurgical wear model, with G. Cailletaud.
- **Basava R. Akula** (MINES & Safran, 2015-2018), Parallel mortar-based contact algorithms, with J. Vignollet.
- **Robin Lethiecq** (MINES & CEA-Leti, 2015-2018), Textile embedded chip on wire, with H. Proudhon, V. Mandrillon.
- **Takahiro Sakimoto** (MINES, 2015-2017), Modeling DWTT for high-strength steels, with J. Besson, Y. Madi.
- **Andrei Shvarts** (MINES, 2015-2018), Fully coupled FE framework for fluid/contact interface, with J. Vignollet.
- **Paolo Cinat** (IMT Lucca, Italy, 3 months stay, 2016), Sealing problems.
- **Aurélien Fouque** (MINES & SUPELEC & Schneider Electric, 2016-2020), Electric arc, with G. Cailletaud, V. Esin, F. Houzé, Ph. Testé.
- **Pauline Bonnet** (IPGP & ENSAM & MINES, 2017-2020), Glacial earthquakes, with A. Mangeney, O. Castelnau, A. Leroyer, P. Queutey.
- **Vikram Phalke** (MINES, 2018-2021), Size effect in single crystal indentation, with S. Forest.
- **Paul Beguin** (MINES, 2020-2023), Thermomechanical contact, with S. Forest, C. Ovalle-Rodas, J. Vignollet.

**Co-supervision of postdoctoral fellows:**

- **Ming Liu** (MINES, 2012-2013), Indentation analysis, with H. Proudhon.
- **Ayaovi Dzifa Kudawoo** (MINES, 2012-2013), Computational contact, with G. Cailletaud.

- **Frederick S. Mballa Mballa** (LaSIPS: MINES & SUPELEC, 2013-2015), Electric contact, with G. Cailletaud, H. Proudhon, F. Houzé, S. Noël.
- **Dmitry Tkalic** (MINES, 2016-2017), Microstructural mechanics of cemented tungsten carbides, with G. Cailletaud.

## • Major collaborations

- Contact, friction, wear: J. Vignollet (Safran tech, France), A. Shvarts (Glasgow University, UK)
- Mechanics of rough contact: G. Ancaux, J.F. Molinari (EPFL, Lausanne, Switzerland)
- Microplasticity: S. Forest (MINES, France)
- Glacial earthquakes: A. Mangeney (IPGP, Paris, France), O. Castelnuovo (ENSAM-Paris, France)
- Friction dynamics: D.S. Kammer (ETH Zurich, Switzerland)

## • Personal information

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

**Hobbies:** photography  $\cup$  astronomy, chess, badminton, rock climbing.

**Personal:** married and have three wonderful children.

## Invited talks

- **“Scientific Publications”**  
Junior Workshop at WCCM-ECCOMAS 2020/2021, Paris, France (virtually), January 8, 2021.
- **“Weakly and strongly coupled simulations of interfacial fluid flow at roughness scale”**  
“Predictive approach of sealing”, Maestral lab 50th anniversary, Pont du Garde, Oct 2-3 2019.
- **“Contact Mechanics at the Roughness Scale”**  
VI International Conference on Computational Contact Mechanics, Leibnizhaus Hannover, Germany, July 3-5 2019.
- **“The role of surface roughness in contact and transport phenomena”**  
School of Civil & Environmental Engineering, Cornell University, Ithaca, USA, October 4, 2018.
- **“The role of surface roughness in contact and transport phenomena”**  
Sullivan Park, Corning Inc, Corning, USA, October 2, 2018.
- **“Contact along virtual interfaces: coupling the X-FEM with the mortar discretization”**  
7th GACM Colloquium on Computational Mechanics, Stuttgart, Germany, October 12, 2017.
- **“The role of surface roughness in contact and transport phenomena”**  
Institut Jean le Rond d’Alambert, Paris, France, September 28, 2017.
- **“Micromechanical and transport properties of contact interfaces between rough surfaces”**  
Laboratoire Modélisation et Simulation Multi Echelle (MSME), Université Paris-Est, Marne-la-Vallée, France, April 20, 2017.
- **“Contact and sealing between solids with rough surfaces: numerical approach”**  
Institute of Mechanics, Lomonosov State University, Moscow, Russia, November 21, 2016.
- **“Quelques exemples de dynamique non-linéaire dans la mécanique du contact / frottement”**  
Manifestation du GDR DYNOLIN, DYnamique NON LINéaire, ENSTA ParisTech, Palaiseau, France, October 11, 2016, opening lecture.
- **“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.