

# Jan Zapletal

Ph.D. in the field of numerical mathematics and computer science

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## WORK EXPERIENCE

<b>1/2016 – present</b>	<b>Researcher</b>  Institution Address Projects IT4Innovations National Supercomputing Center VŠB – Technical University of Ostrava, 17. listopadu 15/2172, 708 33 Ostrava-Poruba, Czech Republic <b>BEM4I</b> , 2013 – present, principal investigator Development of a C++ library for boundary element (BEM) discretization of partial differential equations in 3D aimed at HPC and utilizing several layers of parallelism. <b>Intel Parallel Computing Center (IPCC)</b> , 2016 – 2017, member of the project team Development of highly parallel algorithms and libraries, and support of HPC community codes. <b>READEX</b> , 2016 – present, member of the project team Improving energy-efficiency of applications in the field of High-Performance Computing by exploiting their dynamic behaviour. <b>ESPRESSO</b> , 2014 – present, member of the project team Development of an HPC oriented C++ library for solving large engineering problems by the finite and boundary element tearing and interconnecting (FETI, BETI) method.
<b>1/2015 – 12/2015</b>	<b>Junior Researcher Assistant</b>  Institution Projects IT4Innovations National Supercomputing Center <b>BEM4I</b> (see above)
<b>4/2013 – 12/2014</b>	<b>Research Assistant</b>  Institution Projects IT4Innovations National Supercomputing Center <b>BEM4I</b> (see above) <b>SPOMECH</b> , 2011 – 2014, member of the project team Creating a multidisciplinary research & development team for reliable solution of mechanical problems.
<b>9/2012 – 3/2013</b>	<b>University Project Assistant</b>  Institution Address Projects Institut für Numerische Mathematik (Math D) Graz University of Technology Steyrergasse 30/III, 8010 Graz, Austria <b>CASOPT</b> , 2012 – 2013, member of the project team Controlled component and assembly-level optimization of industrial devices.
<b>11/2007 – 5/2008</b>	<b>Java Programmer, Tester</b>  Institution Address Projects TietoEnator Czech, s.r.o. Na Strži 1707, 140 62 Prague 4, Czech Republic Development and testing of a banking IS.

## TEACHING EXPERIENCE

<b>9/2012 – 9/2014</b>	<b>VŠB – Technical University of Ostrava</b>
Courses	Mathematical Analysis, Linear Algebra (English version)

## INTERNSHIPS

<b>1/2014</b>	<b>EPCC, Edinburgh</b>
Topic	Parallel direct solvers for distributed systems of linear equations
Tutor	Dr. David Henty
Institution	The Edinburgh Parallel Computing Centre
Address	Peter Guthrie Tait Road, Edinburgh, EH9 3FD, United Kingdom
<b>9/2012 – 3/2013</b>	<b>TU Graz</b>
Topic	Shape optimization using the shape calculus and BEM
Tutor	Univ.-Prof. Dr. Olaf Steinbach
Institution	Institut für Numerische Mathematik (Math D), TU Graz
Address	Steyrergasse 30/III, 8010 Graz, Austria
<b>11/2009</b>	<b>Universität Rostock</b>
Topic	Analytical evaluation of integrals in 2D BEM
Tutor	Prof. Dr. Peter Takáč, Ph.D.
Institution	Institut für Mathematik, Universität Rostock
Address	Ulmenstraße 69 (Haus 3), 18057 Rostock, Germany

## EDUCATION

<b>9/2012 – 4/2017</b>	<b>Postgradual Education (Ph.D.)</b>
Topic	The boundary element method for shape optimization in 3D
Institution	Dept. of Applied Mathematics Faculty of Electrical Engineering and Computer Science VŠB – Technical University of Ostrava
Address	17. listopadu 15, 708 33 Ostrava-Poruba, Czech Republic
<b>9/2009 – 6/2011</b>	<b>Pregradual Education (M.Sc.)</b>
Title awarded	Ing. (M.Sc. equivalent)
Topic	The boundary element Method for the Helmholtz equation in 3D
Principal subjects	Computational and applied mathematics, computer science
Institution	Dept. of Applied Mathematics VŠB – Technical University of Ostrava

9/2006 – 6/2009	<b>Pregradual Education (Bc.)</b>
Title awarded Topic Principal subjects Institution	Bc. The boundary element method for Dirichlet-Neumann boundary value problems Computational and applied mathematics, computer science Dept. of Applied Mathematics VŠB – Technical University of Ostrava
9/1998 – 6/2006	<b>Secondary Education</b>
Title awarded Institution Address	General Certificate of Education Wichterlovo Gymnázium Čs. Exilu 669, 708 00 Ostrava-Poruba, Czech Republic

## AWARDS

2017	<b>Prof. Babuška's Prize (Ph.D. category), first place</b>
Awarded by Topic	Czech Mathematical Society The boundary element method for shape optimization in 3D
2017	<b>Joseph Fourier Prize, first place</b>
Awarded by	Atos IT Solutions and Services, s.r.o, and the French Embassy in the Czech Republic
2016	<b>Rector's Award for excellent Ph.D. students</b>
Awarded by	Rector of VŠB – Technical University of Ostrava
2015, 2014, 2013	<b>Best Ph.D. student award</b>
Awarded by	Dept. of Applied Mathematics, VŠB – Technical University of Ostrava
2015, 2014, 2013	<b>Dean's Award (WOFEX workshop)</b>
Awarded by Topic	Dean of the Faculty of Electrical Engineering and Computer Science BEM based evaluation of homogenized coefficients in conductivity (2015) Shape optimization based on the shape calculus (2014) Shape optimization for free surface problems using subdivision techniques (2013)
2011	<b>Prof. Babuška's Prize (M.Sc. category), third place</b>
Awarded by Topic	Czech Society for Mechanics The boundary element method for the Helmholtz equation in 3D
2011	<b>Students' Scientific Work Competition, second place</b>
Awarded by Topic	Czech Mathematical Society Semi-analytical integration for the hypersingular operator

<b>2009</b>	<b>R. S. Varma Memorial Student Paper Competition, first place</b>
Awarded by Topic	Forum for Interdisciplinary Mathematics The boundary element method for boundary value problems in 3D

## PERSONAL SKILLS

<b>Language skills</b>	<p><b>Czech</b> (mother tongue)</p> <p><b>English</b> (Advanced-level user, Cambridge Certificate of Advanced English)</p> <p><b>German</b> (Basic-level user)</p>
<b>Computer skills</b>	<p><b>Programming in C++, C</b> Experience with the development of HPC oriented libraries including several layers of parallelism (vectorization, shared and distributed memory parallelism) and utilization of coprocessors (Intel MIC).</p> <p><b>Programming with OpenMP, MPI standards</b></p> <p><b>Programming in Matlab</b> Experience with programming of various numerical algorithms.</p> <p><b>Algorithm design and optimization</b></p> <p><b>Knowledge of Linux OS</b> Code development under the Linux OS, knowledge of Bash scripting.</p> <p><b>Microsoft Office suite</b> MS Word, MS Excel, MS PowerPoint, MS Outlook.</p> <p><b>Typesetting system Latex</b> Creating reports, papers, and Beamer presentations.</p>
<b>Hobbies</b>	Travelling, mathematics, photography