

doc. Ing. David Horák, PhD.

Born:	30 March 1977 in Bohumín, Czech Republic
Contact:	david.horak@vsb.cz , david.horak@ugn.cas.cz
IDs:	ORCID ID: 0000-0001-8825-1944 , WoS ID: HSW-1888-2023, Scopus ID: 34770654300
Academic degrees:	1995 – 2000 VŠB –TUO, MSc. Study, Computer Science, Specialization Applied Mathematics, MSc. thesis: Parallel implementation of duality based domain decomposition method with natural coarse grid for the solution of the model variational inequality
	2000 – 2007 VŠB –TUO, PhD. Study, Computer Science and Applied Mathematics, PhD. thesis: Domain decomposition methods of FETI type for variational inequalities solution
	2017 VŠB –TUO, doc. Habilitation in Applied Mathematics, habilitation thesis: Scalable solvers combining FETI and QP algorithms
Career:	2003 – 2017 Assistant at Department of Applied Mathematics at VŠB – TUO
	2017 – till now Associate Professor at Department of Applied Mathematics at VŠB – TUO
	2012 – 2014 Junior Researcher at IT4Innovations at VŠB – TUO
	2015 – 2018 Senior Researcher at IT4Innovations at VŠB – TUO
	2018 – till now Senior Researcher at Dep. of Appl. Math. and Comp. Science, Institute of Geonics, Czech Academy of Sciences, since 2022 Deputy of its Head
Professional interest:	Quadratic programming algorithms, domain decomposition methods of FETI type, their parallel implementation into PERMON toolbox (permon.vsb.cz), Integral-discrete transforms
Research work / projects:	MRT - Member of research team, PI - Principal investigator
	2012 – 2014 PRACE 3IP project RI-312763, MRT
	2011 – 2013 PRACE 2IP project RI-283493, MRT
	2010 – 2012 PRACE 1IP project RI-261557, MRT
	2009 – 2011 GACR 101/09/P601- Adaptation of scalable FETI-type algorithms for solving large-scale 3D elasticity engineering problems with a high number of bodies in mutual contact, PI
	2007 – 2013 Computationally demanding computer simulations and optimizations, MSM6198910027, MRT
	2015 – 2017 GAČR 15-18274S - Efficient life estimation methods for general multiaxial loading, PI
	2015 – 2016 READEX project - the EU H2020 research and innovation programme under grant agreement No 671657, Czech PI
	2019 – 2023 EURAD - European Joint Programme on Radioactive Waste Management 847593 - EURAD- NFRP-2018, MRT
	2019 – 2022 GAČR 19-11441S: Efficient and reliable computational techniques for limit analysis and incremental methods in geotechnical stability, MRT
	2019 – 2022 ENDORSE - Prediction of EDZ properties with impact on safety and reliability of deep radioactive waste repository, TAČR grant No. TK02010118, MRT
	1999 – 2004 Development of algorithms for solving complex industrial problems, CEZ:J17/98:272400019, MRT
	2005 – 2008 Analysis of geophysical data using modern mathematical methods, AVČR-Ruská AV, MRT
	2013 – 2016 EXA2CT, FP7/2007-2013, 610741, MRT

	2016 – 2020	National Sustainability Program (NPU II), IT4Innovations excellence in science, LQ1602, MRT
	2022 – 2024	GACR 22-13220S, Development of iterative algorithms for solving contact problems occurring in the analysis of bolted joints of steel structures, MRT
	2022 – 2027	Operational Programme Just Transition, REFRESH - Research Excellence For REgion Sustainability and High-tech Industries, CZ.10.03.01/00/22_003/0000048, MRT
	2024 – 2026	TACR, Use of impulse excitation technique for non-destructive testing of elastic properties of materials, CZ.01.01.01/01/22_002/0000887, MRT
	2025	Strategy of the Academy of Sciences of the Czech Republic, AI - Artificial Intelligence for Science and Society, Wildfire Identification Based on Spatiotemporal Processing of Satellite Images, PI
	2011 – till now	Co-author of FLLOP and PERMON libraries
Awards:	2000	Finishing the MSc. studies with honour
	2000	Dean's prize for studies, MSc. thesis and representation of the university, Ostrava.
	2000	2nd position in students contest SVOČ, Ostrava in Applied Analysis.
	2007	Babuška prize for PhD. thesis in Computer Sciences.
	2008	Rector prize for PhD. thesis, Ostrava.
Research stays:	2001	EPCC Edinburgh (2 months),
	2001	Johannes Kepler Universitat Linz (3 months),
	2004	University of Colorado – Dep.of Aerospace Engineering in Boulder (2.5 months),
	2005	EPCC Edinburgh (1 month),
	2006	Stanford University in California (2 months),
	2008	EPCC Edinburgh (1 month),
	2012	CSC Helsinki (1 month and 1 month),
	2013	CSC Helsinki (2 weeks)
Publication activities:		Author and co-author of 58 papers in WoS database, 68 papers in Scopus database, 99 documents in GoogleScholar database, 6 registered software, Number of citations/without selfcitations: 448/350 (WoS), 603/458 (Scopus), 1112 (GoogleScholar), H-index: 11/12/16 (WoS/Scopus/GoogleScholar), Chapter in book Z. Dostál: Optimal Quadratic Programming and QPCE with Case Studies (Springer), approx. 150 reviews.
Teaching - lectures/ guarantor:		Numerical linear algebra II, Integral and discrete transforms, Selected chapters from integral and discrete transforms, Iterative methods, Function of complex variable and integral transforms
Teaching - exercises:		Linear algebra, Mathematical analysis, Discrete mathematics, Function of complex and integral transforms, Integral and discrete transforms,
Bc. supervisor:		6 students (Vůjtek, Sojka, Tomčala, Kružík, Blana, Patzián)
MSc. supervisor:		5 students (Votípková, Rotterová, Tomčala, Sojka, Růžička)
PhD. supervisor:		2 students (Pecha, Kružík)
Awards of supervised students:		J. Kružík won 2nd place among MSc. theses in the SVOČ 2016 competition in the Applied Mathematics - Numerical Analysis Section for his Bc. thesis J. Kružík won the 2016 Babuška Award in the MSc. category for his Bc. thesis J. Kružík won the 2nd place in the Babuška Award 2018 in the MSc. category R. Sojka won the 3rd place in the Babuška Award 2015 in the MSc category
Memberships:		Member of JČMF, Member of EU-MATHS-IN
Invited lectures:		IT4I activities in the READEX project, HiPEAC meeting, Porto, Portugal, 20-22.4.2016 Will we live to a zeta machine? Development and implementation of scalable and energy efficient algorithms, PRACE Autumn School, Hagenberg, Linz, Austria, 27.-30.9.2016
Other info:		Lucky man, fan of Tatra old-timers, handyman, gardener :)

