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Education

Ph.D., Applied Mathematics, University of Colorado at Denver, 1993-1998; Advisor: Jan Mandel. Thesis title: *Analysis of a Lagrange Multiplier Based Domain Decomposition*.

M.S., Mathematical Modeling in Physics, Charles University, Prague, 1988-1993. Advisor: Miloslav Feistauer. Thesis title: *The Method of Boundary Elements and Integral Equations in Mathematical Physics*.

Fields of Interest

Wave propagation, acoustic scattering, domain decomposition methods, numerical analysis, finite element and boundary element method, parallel computations, scientific computing, mathematical software development.

Professional Experience

- Senior Research Engineer at Stanford University (2011-present)
- Research Associate at Stanford University (2004-present)
- Senior Research Associate at the University of Colorado at Boulder (2001-2004)

Awards and Honors

Charles University Scholarship – 1990-1993
Graduation with Honors – Charles University - 1993

Journal Articles

S. GRIMBERG, R. TEZAUR, C. BOU-MOSLEH, AND C. FARHAT, *Mesh sampling and weighting for the hyperreduction of nonlinear Petrov-Galerkin reduced-order models based on local reduced-order bases*, submitted to International Journal for Numerical Methods in Engineering.

C. FARHAT, R. TEZAUR, T. CHAPMAN, P. AVERY, AND C. SOIZE, *A Feasible probabilistic learning method for model form uncertainty quantification in vibration analysis.*, AIAA Journal, Volume 57, Number 11, November 2019.

R. TEZAUR AND P. VANEK, *Improved convergence estimate for a multiply polynomially smoothed two-level method with an aggressive coarsening*, Applications of Mathematics,

Vol. 63, No. 6 (2018), pp. 629–641.

R. BORKER, C. FARHAT, AND R. TEZAUR, *A discontinuous Galerkin method with Lagrange multipliers for spatially-dependent advection-diffusion problems*, Computer Methods in Applied Mechanics and Engineering, Volume 327, 1 December 2017, Pages 93-117.

R. TEZAUR AND P. VANEK, *Improved convergence bounds for two-level methods with an aggressive coarsening and massive polynomial smoothing*, Electronic Transactions on Numerical Analysis 48 (2018), pp. 264–285.

R. BORKER, C. FARHAT, AND R. TEZAUR, *A high-order discontinuous Galerkin method for unsteady advection-diffusion problems*, Journal of Computational Physics 332 (2017), pp. 520–537.

D. AMSALLEM, R. TEZAUR, AND C. FARHAT, *Real-time solution of linear computational problems using databases of parametric reduced-order models with arbitrary underlying meshes*, Journal of Computational Physics, 326 (2016), pp. 373-397.

J. BROUSEK, P. FRANKOVA, H. KOPINCOVA, R. KUZEL, R. TEZAUR, P. VANEK, AND Z. VASTL, *An overview of multilevel methods with aggressive coarsening and massive polynomial smoothing*, Electronic Transactions on Numerical Analysis (ETNA) 44 (2015), pp. 401–442

D. WANG, R. TEZAUR, AND C. FARHAT, *A hybrid discontinuous in space and time Galerkin method for wave propagation problems*, International Journal for Numerical Methods in Engineering, 99 (4) (2014), pp. 263-289.

R. TEZAUR, I. KALASHNIKOVA, C. FARHAT, *The discontinuous enrichment method for medium-frequency Helmholtz problems with a spatially variable wavenumber*, Computer Methods in Applied Mechanics and Engineering 268 (2014), pp. 126–140.

U. HETMANIUK, R. TEZAUR, AND C. FARHAT, *An adaptive scheme for a class of interpolatory model reduction methods for frequency response problems*, International Journal for Numerical Method in Engineering, 93 (10) (2013), pp. 1109–1124.

U. HETMANIUK, R. TEZAUR, AND C. FARHAT, *Review and assessment of interpolatory model order reduction methods for frequency response structural dynamics and acoustics problems*, International Journal for Numerical Method in Engineering, 90 (13) (2012), pp. 636–1662.

J. LI, C. FARHAT, P. AVERY, R. TEZAUR, *A dual-primal FETI method for solving a class of fluid-structure interaction problems in the frequency domain*, International Journal for Numerical Method in Engineering, 89 (4) (2012), pp. 418–437.

D. WANG, R. TEZAUR, J. TOIVANEN, AND C. FARHAT, *Overview of the discontinuous en-*

richment method, the ultra-weak variational formulation, and the partition of unity method for acoustic scattering in the medium frequency regime and performance comparisons, International Journal for Numerical Method in Engineering, 89 (4) (2012), pp. 403–417.

I. KALASHNIKOVA, R. TEZAUR, C. FARHAT, *A discontinuous enrichment method for variable-coefficient advection-diffusion at high Péclet number*, International Journal for Numerical Methods in Engineering, 87 (1-5) (2011), pp. 309–335.

P. MASSIMI, R. TEZAUR, AND C. FARHAT, *A discontinuous enrichment method for the efficient solution of plate vibration problems in the medium-frequency regime*. International Journal for Numerical Methods in Engineering, 84 (2) (2010), pp. 127–148.

C. FARHAT, I. KALASHNIKOVA, AND R. TEZAUR, *A higher-order discontinuous enrichment method for the solution of high Péclet advection–diffusion problems on unstructured meshes*, International Journal for Numerical Methods in Engineering, 81 (5) (2010), pp. 6048–636.

C. FARHAT, R. TEZAUR, J. TOIVANEN, *A domain decomposition method for discontinuous Galerkin discretizations of Helmholtz problems with plane waves and Lagrange multipliers*, International Journal for Numerical Methods in Engineering, 78 (13) (2009), pp. 1513–1531.

I. KALASHNIKOVA, C. FARHAT, R. TEZAUR, *A discontinuous enrichment method for the finite element solution of high Péclet advection-diffusion problems*, Finite Elements in Analysis & Design 45 (4) (2009), pp. 238–250.

S. PETERSEN, C. FARHAT, R. TEZAUR, *A space-time discontinuous Galerkin method for the solution of the wave equation in the time domain*, International Journal for Numerical Methods in Engineering 78 (3) (2009), pp. 275–295.

P. MASSIMI, R. TEZAUR, AND C. FARHAT, *A Discontinuous Enrichment Method for Three-Dimensional Multiscale Harmonic Wave Propagation Problems in Multi-Fluid and Fluid-Solid Media*, International Journal for Numerical Methods in Engineering, Volume 76, Issue 3 (2008), pp. 400–425.

R. TEZAUR, L. ZHANG, AND C. FARHAT, *A discontinuous enrichment method for capturing evanescent waves in multiscale fluid and fluid/solid problems*, Computer Methods in Applied Mechanics and Engineering, 197 (19) (2008), pp. 1680–1698

I. HARARI, R. TEZAUR, AND C. FARHAT, *A study of higher-order discontinuous Galerkin and quadratic least-squares stabilized finite element computations for acoustics*, Journal of Computational Acoustics, 14 (1) (2006), pp. 1–19.

R. TEZAUR AND C. FARHAT, *Three-dimensional discontinuous Galerkin elements with plane waves and Lagrange multipliers for the solution of mid-frequency Helmholtz problems*, International Journal for Numerical Methods in Engineering, 66 (2006), pp. 796–815.

- L. ZHANG, R. TEZAU, AND C. FARHAT, *The discontinuous enrichment method for elastic wave propagation in the medium frequency regime*, International Journal for Numerical Methods in Engineering, 66 (2006), pp. 2086–2114.
- C. FARHAT, P. AVERY, R. TEZAU, AND J. LI, *FETI-DPH: A dual primal domain-decomposition method for acoustic scattering*, Journal of Computational Acoustics, 13 (3) (2005), pp. 499–524.
- J. MANDEL, C. DOHRMANN, AND R. TEZAU, *An algebraic theory for primal and dual substructuring methods by constraints*, Applied Numerical Mathematics, 54 (2005), pp. 167–193.
- C. FARHAT, P. WEIDEMANN-GOIRAN, AND R. TEZAU, *A discontinuous Galerkin method with plane waves and Lagrange multipliers for the solution of short wave exterior Helmholtz problems on unstructured meshes*, Wave Motion, 39 (2004), pp. 307–317.
- R. TEZAU, C. FARHAT, AND R. DJELLOULI, *Three-dimensional finite element calculations in acoustic scattering problems using arbitrarily shaped convex artificial boundaries*, International Journal for Numerical Methods in Engineering, 53 (2002), pp. 1461–1476.
- C. FARHAT, R. TEZAU, AND R. DJELLOULI, *On the solution of three-dimensional inverse obstacle acoustic scattering problems by a regularized Newton method*, Inverse Problems, 18 (2002), pp. 1229–1246.
- R. DJELLOULI, C. FARHAT, AND R. TEZAU, *A fast method for solving acoustic scattering problems in frequency bands*, Journal of Computational Physics, 168 (2001), pp. 412–432.
- J. MANDEL AND R. TEZAU, *On the convergence of a dual-primal substructuring method*, Numerische Mathematik, 88 (2001), pp. 543–558.
- R. TEZAU, A. MACEDO, AND C. FARHAT, *Iterative solution of large-scale acoustic problems with multiple right hand sides by a domain decomposition method with Lagrange multipliers*, International Journal for Numerical Methods in Engineering, 51 (2001), pp. 1175–1193.
- R. DJELLOULI, C. FARHAT, A. MACEDO, AND R. TEZAU, *Finite element solution of two-dimensional acoustic scattering problems using arbitrarily shaped convex artificial boundaries*, Journal of Computational Acoustics, 8 (2000), pp. 81–100.
- J. MANDEL, R. TEZAU, AND C. FARHAT, *A scalable substructuring method by Lagrange multipliers for plate bending problems*, SIAM Journal on Numerical Analysis, (1999), pp. 1370–1391.
- D. RIXEN, C. FARHAT, R. TEZAU, AND J. MANDEL, *Theoretical comparison of the FETI and algebraically partitioned FETI methods, and performance comparisons with a di-*

rect sparse solver, International Journal for Numerical Methods in Engineering, 46 (1999), pp. 501–534.

P. VANĚK, M. BREZINA, AND R. TEZAU, *Two-grid method for linear elasticity on unstructured meshes*, SIAM Journal on Scientific Computing, 21 (1999), pp. 900–923.

J. MANDEL AND R. TEZAU, *Convergence of a substructuring method with Lagrange multipliers*, Numerische Mathematik, 73 (1996), pp. 473–487.

Book Chapters and Refereed Proceedings Articles

N. ALHAZMI, Y. GHAZI, C. FARHAT, R. TEZAU, AND P. AVERY, *Parametric Studies of Aerodynamic Properties of Wings Using Various Forms of Machine Learning*, ICCAIS' 2020: 3rd International Conference on Computer Applications & Information Security, Riyadh, Saudi Arabia, March 19-21, 2020.

C. FARHAT, A. BOS, R. TEZAU, T. CHAPMAN, P. AVERY, AND C. SOIZE, *A stochastic projection-based hyperreduced order model for model-form uncertainties in vibration analysis*, AIAA Non-Deterministic Approaches Conference, Scitex Forum, 8-12 January 2018, Kissimmee, Florida.

R. BORKER, C. FARHAT, R. TEZAU, *A high-order discontinuous Galerkin method for variable-coefficient advection-diffusion problems*, 14th U.S. National Congress on Computational Mechanics, July 17-20, 2017, Montreal, Quebec, Canada.

R. TEZAU AND C. FARHAT, *Reduced order models for direct and inverse acoustic problems*, High Performance Computing in Science and Engineering, May 22-25, 2017, Solan, Czech Republic.

R. BORKER, C. FARHAT, AND R. TEZAU, *A high-order discontinuous Galerkin method for unsteady flow problems*, 54th AIAA Aerospace Sciences Meeting, AIAA SciTech, (AIAA 2016-1333).

D. AMSALLEM, Y. CHOI, R. TEZAU, AND C. FARHAT, *Real-time PDE-constrained optimization using databases of parameterized reduced-order models*, 13th US National Congress on Computational Mechanics, San Diego, California, July 26-30 (2015).

C. FARHAT, U. HETMANIUK AND R. TEZAU, *An adaptive interpolatory model reduction method for vibroacoustic problems*, Eleventh World Congress on Computational Mechanics (WCCM XI), Barcelona, Spain, July 20-25 (2014).

R. TEZAU, I. KALASHNIKOVA, AND C. FARHAT, *Discontinuous enrichment method for smoothly variable wavenumber medium-frequency Helmholtz problems*, Proceedings of the 11th International Conference on the Mathematical and Numerical Aspects of Waves,

Gammarth-Tunis, Tunisia, 2013, pp. 353-354.

C. FARHAT, R. TEZAUR, AND U. HETMANIUK, *Recent developments in high-performance computational vibro-acoustics in the medium frequency regime*, IN12-362, Proceedings of the Internoise 2012/ASME NCAD meeting, New York City, New York, August 19-22 (2012).

C. FARHAT, R. TEZAUR, AND J. TOIVANEN, *A domain decomposition solver for the discontinuous enrichment method for the Helmholtz equation*, Proceedings of the 20th International Conference on Domain Decomposition Methods, 7-11 February 2011, UC San Diego in La Jolla, California; Springer, 2013, pp. 207-214.

C. FARHAT, U. HETMANIUK, AND R. TEZAUR, *A simple adaptive scheme for a class of interpolatory model reduction methods for frequency response problems*, Proceedings of the 10th International Conference on the Mathematical and Numerical Aspects of Waves Vancouver, Canada, 2011, pp. 327-330.

C. FARHAT, R. TEZAUR, AND J. TOIVANEN, *A hybrid discontinuous Galerkin method with plane waves for Helmholtz problems and a domain decomposition method*, Proceedings of the 10th International Conference on the Mathematical and Numerical Aspects of Waves Vancouver, Canada, 2011, pp. 229-232.

C. FARHAT, R. TEZAUR, AND J. TOIVANEN, *A domain decomposition method for Helmholtz problems discretized using the discontinuous enrichment method*, Proceedings of Waves 2009 - The 9th International Conference on Mathematical and Numerical Aspects of Waves Propagation, INRIA, Pau, France, 2009, pp. 166-167.

C. FARHAT, R. TEZAUR, AND J. TOIVANEN *A domain decomposition method for a class of discontinuous Galerkin discretizations of Helmholtz problems*, Proceedings of Waves 2007 - The 8th International Conference on Mathematical and Numerical Aspects of Waves, University of Reading, U.K., 2007, pp. 370-372.

R. DJELLOULI, R. TEZAUR, AND C. FARHAT, *On the solution of inverse obstacle acoustic scattering problems with a limited aperture*, Mathematical and Numerical Aspects of Wave Propagation, P. J. G. C. Cohen, E. Heikkola, and P. Neittaanmaki, eds., Springer, 2003, pp. 625-630.

C. FARHAT, R. TEZAUR, AND R. DJELLOULI, *An iterative method for the solution of three-dimensional inverse acoustic scattering problems*, Proceedings of the 2002 ASME International Mechanical Engineering Congress and Exposition, Louisiana, November 17-22, 2002.

C. FARHAT, R. TEZAUR, AND R. DJELLOULI, *On the solution of three-dimensional inverse obstacle acoustic scattering problems by a regularized Newton method*, Proceedings of the Second Conference on Inverse Problems, Control, and Shape Optimization, J.J.T. Ha Duong and M. Jaoua, eds., 2002, pp. 105-110.

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P. VANĚK, R. TEZAUR, M. BREZINA, AND J. KRŽIŽKOVÁ, *Two-level method with coarse space size independent convergence*, in Domain Decomposition Methods in Sciences and Engineering, R. Glowinski, J. Périaux, Z. Shi, and O. Widlund, eds., John Wiley & Sons Ltd., New York, N.Y., 1997. Proceedings of the International Conference on Domain Decomposition (8th : 1995 : Peking, China).

S. GHOSAL, J. MANDEL, AND R. TEZAUR, *Automatic substructuring for domain decomposition using neural networks*, in Proceedings of IEEE International Conference on Neural Networks, vol. 6, Orlando, June 28 - July 3, 1994, pp. 3816–3821.

M. FEISTAUER, G. C. HSIAO, R. E. KLEINMAN, AND R. TEZAUR, *Analysis and numerical realization of coupled BEM and FEM for nonlinear exterior problems*, in Inverse Scattering and Potential Problems in Mathematical Physics: Proceedings of a Conference held in Oberwolfach, December, 1993, R. Kleinman, R. Kress, and E. Martensen, eds., 1993, pp. 47–73.