George Stavroulakis

Senior researcher, architect of MSolve

Research and interests

- Software architecture and programming languages
- High performance computing
- GPUs and accelerators
- Domain decomposition methods

Education

- Ph.D. High performance computing, NTUA – School of Civil Engineering, Greece.
- M.Sc. Computational Mechanics, NTUA – School of Chemical Engineering, Greece.
- M. Sc. Civil Engineering, NTUA – School of Civil Engineering, Greece.

Selected publications

- M. Papadrakakis, **G. Stavroulakis**, A. Karatarakis, "A new era in scientific computing: Domain decomposition methods in hybrid CPU–GPU architectures*,*" *Computer Methods in Applied Mechanics and Engineering,* 200 (13-16), 1490-1508.
- **G. Stavroulakis**, D.G. Giovanis, M. Papadrakakis, V. Papadopoulos, "A new perspective on the solution of uncertainty quantification and reliability analysis of large-scale problems," *Computer Methods in Applied Mechanics and Engineering,* 276, 627-658.
- **G.M. Stavroulakis**, M. Papadrakakis, "Advances on the domain decomposition solution of large scale porous media problems," *Computer Methods in Applied Mechanics and Engineering,* 198 (21-26), 1935-1945.
- **G. Stavroulakis**, D.G. Giovanis, V. Papadopoulos, M. Papadrakakis, "A GPU domain decomposition solution for spectral stochastic finite element method," *Computer Methods in Applied Mechanics and Engineering,* 327, 392-410.
- **G. Stavroulakis**, D. Tsapetis, M. Papadrakakis, "Non-overlapping domain decomposition solution schemes for structural mechanics isogeometric analysis," *Computer Methods in Applied Mechanics and Engineering,* 341, 695-717.
- D. Tsapetis, G. Sotiropoulos, **G. Stavroulakis**, V. Papadopoulos, M. Papadrakakis, "A stochastic multiscale formulation for isogeometric composite Kirchhoff–Love shells," *Computer Methods in Applied Mechanics and Engineering,* 373, 113541.

- D.G. Giovanis, V. Papadopoulos, **G. Stavroulakis**, "An adaptive spectral Galerkin stochastic finite element method using variability response functions," *International Journal for Numerical Methods in Engineering,* 104 (3), 185-208.
- **G. Stavroulakis**, D.G. Giovanis, M. Papadrakakis, V. Papadopoulos, "Monte Carlo Simulation vs. Polynomial Chaos in Structural Analysis: A Numerical Performance Study," *Multiscale Modeling and Uncertainty Quantification of Materials and Structures,* Springer, Cham, 215-231, 2014.
- M. Papadrakakis, **G.M. Stavroulakis**, "Solution of Large-Scale Porous Media Problems," *ECCOMAS Multidisciplinary Jubilee Symposium*, 79-93.
- **G. Stavroulakis**, M. Papadrakakis, "Solution of soil-structure interaction problems in GPU environments," *COMPDYN,* 2017.
- **G. Stavroulakis**, D. Tsapetis, M. Papadrakakis, "Extending Domain Decomposition Solution Schemes for Large-Scale Isogeometric Simulations," 2017.
- V. Papadopoulos, **G. Stavroulakis**, D. Giovanis, M. Papadrakakis, "An adaptive polynomial chaos expansion for accelerating the solution of Spectral Stochastic FEM problems," *11th World Congress on Computational Mechanics, 5th European Conference on Computational Mechanics, 6th European Conference on Computational Fluid Dynamics,* July 20 - 25, 2014, Barcelona, Spain.
- **G. Stavroulakis**, M. Papadrakakis, D. Giovanis, V. Papadopoulos, "A domain decomposition solution of soil-structure interaction problems in porous media considering uncertainties," *COUPLED PROBLEMS 2005, Computational Methods for Coupled Problems in Science and Engineering*, Santorini, Greece, May 25-28.
- **G Stavroulakis**, D Giovanis, V Papadopoulos, M Papadrakakis, "Parallel and scalable solution schemes for metaheuristic optimization algorithms considering uncertainties, in the context of structural analysis," *ECCOMAS Congress*, 2016.
- **G. Stavroulakis**, D. Giovanis, M. Papadrakakis, V. Papadopoulos, "Assessing the numerical efficiency of Monte Carlo and Spectral Stochastic FEM in structural problems," *11th World Congress on Computational Mechanics, 5th European Conference on Computational Mechanics, 6th European Conference on Computational Fluid Dynamics,* July 20 - 25, 2014, Barcelona, Spain.
- V. Papadopoulos, **G. Stavroulakis**, D.G. Giovanis, M. Papadrakakis, "Monte Carlo simulation vs Spectral Galerkin method: A numerical performance study," *First Pan American Congress on Computational Mechanics*, PANACM 2015, April 27-29, 2015, Buenos Aires, Argentina.
- **G. Stavroulakis**, D. Tsapetis, M. Papadrakakis, "Domain decomposition solution schemes for large-scale IGA problems," *ECCOMAS Congress*, 2016.
- **G. Stavroulakis**, M. Papadrakakis, "Enhancing the performance of primal and dual domain decomposition solvers in the context of structural dynamics," *ECCOMAS Congress*, 2016.

- G.P. Pittos, **G.M. Stavroulakis**, M. Papadrakakis, "Nonlinear Dynamic Analysis of Soil–Pile-Structure Interaction," *COMPDYN,* 2017.
- D.G. Giovanis, V. Papadopoulos, **G. Stavroulakis**, "A VRF-BASED SPARSE SSFEM OF NON-GAUSSIAN STOCHASTIC FIELDS," *11th World Congress on Computational Mechanics, 5th European Conference on Computational Mechanics, 6th European Conference on Computational Fluid Dynamics,* July 20 - 25, 2014, Barcelona, Spain.
- D. Tsapetis, G. Sotiropoulos, **G. Stavroulakis**, V. Papadopoulos, "Isogeometric Multiscale modelling of Kirchhoff-Love shell structures," *CIMNE Congress*, 2019.