Vita

STAVROS A. BELBAS

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Research areas.

Optimal control, dynamic game theory, analytical and numerical methods in systems analysis and control.

Numerical solution of partial differential equations.

Mathematical modeling and analysis of systems involving continuum mechanics and related issues.

Optimal control and identification for systems governed by partial differential equations, with applications to environmental problems.

Analysis, stability and control of stochastic systems, with applications.

2-D and N-D systems, learning systems, neural networks.

Control systems with non-local operators: integral equations, mathematical models of hysteresis; viscoelasticity, constitutive laws with memory and nonlocality.

Optimal control with non-additive cost functionals, Wiener-Volterra series.

Biochemistry and neurocomputing.

Counterterrorism.

Current research projects.

H3 project. Control and game theory for hybrid hysteretic and hereditary systems.

Floquet project. Extensions of Floquet theory to dynamical systems other than ordinary differential equations, such as integral and integro-differential equations.

Soatiotemporal integral equations. Volterra equations beyond the third kind, and mixed Volterra-Fredholm integral equations.

Selected recent publications

S. A. Belbas, Models with memory and hysteresis in groundwater modelling and remediation, Proc. 3-rd International Conference on Experiments/Process/System Modelling/Simulation and Optimization, 2009.

S. A. Belbas and Y. H. Kim, A model of hysteresis with two inputs, Journal of Mathematical Analysis and Applications, Vol. 366, 2010, pp. 181-194.

S. A. Belbas, Theoretical basis of parallel computing for multiple Volterra integral equations, Proc. Neural, Parallel, and Scientific Computations, Vol. 4, 2010, pp. 54-58.

S. A. Belbas, Y. Bulka, Numerical solution of multiple nonlinear Volterra integral equations, Applied Mathematics and Computation, Vol. 217, 2011, pp. 4791-4804.

S. A. Belbas, Floquet theory for integral and integro-differential equations, Applied Math and Computation, Vol. 223, 2013, pp. 327 – 345.

S. A. Belbas, Spatiotemporal functional series for food-energy-water nexus modeling (electronic file only), in “Proc. Scientific Comp.”, 2016.

S. A. Belbas, W. H. Schmidt, Solvable cases of optimal control problems for integral equations, submitted, 2016.

Graduate courses recently taught.

Mathematical Statistics I and II.

Numerical Analysis I and II.

Nonlinear Optimization.

Recent Service to the Mathematics Department.

Committee on upgrading the undergraduate program in Applied Mathematics, from Spring 2016 to the present semester.

Recent service to the scientific community.

Referee for several reputable journals and conferences.

Reviewer for NSF.