Pure and Applied Functional Analysis
Volume 6, Number 6, 2021, i–ii

Yokohama Publishers
ISSN 2189-3764 ONLINE JOURNAL

PREFACE: OPTIMIZATION THEORY

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This special issue on Optimization Theory is dedicated to Professor Terry Rockafellar on the occasion of his 85th birthday.

Professor Ralph Tyrrell (Terry) Rockafellar is an outstanding American mathematician, who has made fundamental contributions to the fields of optimization theory, convex and variational analysis, stochastic programming, and optimal control with applications to economics, finance, science and engineering. Majoring in mathematics, he graduated summa cum laude from Harvard University in 1957, was a Fulbright Scholar at the University of Bonn in 1957-58 and completed a Master of Science degree at Marquette University in 1959. Professor Rockafellar earned his Doctor of Philosophy degree in mathematics from Harvard University in 1963, writing his dissertation on "Convex Functions and Dual Extremum Problems".

After graduating from Harvard, Terry Rockafellar became Assistant Professor of Mathematics at the University of Texas, Austin, where he was also affiliated with the Department of Computer Science. After two years, he moved to the University of Washington in Seattle, where he filled joint positions in the Departments of Mathematics and Applied Mathematics from 1966 to 2003, when he retired. He is presently Professor Emeritus at the University of Washington. He has also held adjunct positions at the University of Florida and at the Hong Kong Polytechnic University.

Professor Rockafellar received the Dantzig Prize from the Society for Industrial and Applied Mathematics (SIAM) and the Mathematical Optimization Society in 1982, delivered the 1992 John von Neumann Lecture, received with Roger J.-B. Wets the Frederick W. Lanchester Prize from the Institute for Operations Research and the Management Sciences (INFORMS) in 1998 for their book "Variational Analysis". In 1999, he was awarded the John von Neumann Theory Prize from INFORMS. Professor Rockafellar was elected to the 2002 class of Fellows of INFORMS. He is a recipient of honorary doctoral degrees from the University of Groningen (1984), the University of Montpellier (1995), the University of Chile (1998), and the University of Alicante (2000). The Institute for Scientific Information (ISI) lists Professor Rockafellar as a highly cited researcher. He is an author of six books and around 260 research publications, and has supervised 19 doctoral students.

In this special issue we present papers authored by a selected group of experts in the area of optimization. The papers collected here have been contributed by collaborators, friends and colleagues of Terry, who were influenced by his scientific work. The special issue contains twenty-four papers contributed by researchers in optimization theory from Austria, Belgium, Bulgaria, Canada, France, Germany, Iran, Israel, Italy, Japan, Morrocco, Norway, Russia, Senegal, Spain, Taiwan, United Kingdom, the USA, and Vietnam.

These papers cover a wide spectrum of important problems and topics of current research interest, including fixed points of compositions of nonexpansive mappings, fast convex optimization via time scaling of damped inertial gradient dynamics, strong bi-metric regularity in affine optimal control problems, extremal systems of convex sets with applications to convex analysis in vector spaces, convex risk measures based on divergence, existence of solutions for vector equilibrium problems via coercing family, a local analysis for eigenvalue complementarity problems, competitive equilibrium by double auctions, saddle-point equilibrium sequences in a singular finite horizon zero-sum linear-quadratic differential game, Rényi entropy and calibration of distribution tails, inverse problems of estimating the stochastic flexural rigidity in fourth-order models, evaluation of fixed point quasiconvex subgradient methods with computational inexactness, optimality conditions in nonlinear vector optimization with variable ordering structures, geometric characterizations of the strict Hadamard differentiability of sets, adaptive penalty methods for limit variational inequalities, a necessary optimality condition involving measures of noncompactness, error analysis for the implicit Euler discretization of affine optimal control problems, split common null point problems and hybrid methods for maximal monotone operators in two Banach spaces, dynamic pricing under nested logit demand, first and second order state-dependent prox-regular sweeping processes, lack of equality between Abel and Cesàro limits in discrete optimal control, differential properties of multi-functions defined implicitly by set-valued inclusions, directional continuity, Lipschitzian properties, and differentiability and a turnpike property of trajectories of perturbed dynamical systems with a Lyapunov function.

Therefore, we feel that this special issue will be highly important for many mathematicians and applied scientists, who are interested in recent developments in optimization theory, as well as in its numerous applications.

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