

FOREWORD

The existence theory in the calculus of variations has a long tradition, to which belongs the now classical work of Hilbert, Tonelli, McShane, Graves, Nagumo, and Young, to name a few.

At the inception of optimal control theory through the pioneering work of Pontryagin, Filippov provided the first existence statement in the new phase of the theory of optimization for the case of bounded control functions.

Existence theory has developed afterwards at the same rapid pace as the entire field of optimization. Its various aspects are as extremely diversified as the field itself: usual solutions, weak or generalized solutions, approximate optimal solutions; bounded and unbounded control functions, and control functions belonging to special classes; one-dimensional and multi-dimensional problems, or lumped and distributed control problems; stochastic problems, systems monitored by ordinary or partial differential equations, by integral equations, by functional equations, retarded systems; methods based on semicontinuity, on variational inequalities theory, on convexity in function spaces; minimax problems; topology of solutions, orientor fields.

The papers appearing in this issue offer only a partial view of the subject.

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