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Special Issue Reprint

Principles of Variational Methods in Mathematical Physics

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This Reprint brings together several valuable papers published in the Special Issue Principles of Variational Methods in Mathematical Physics of the prestigious journal *Axioms*. It presents a collection of articles and reviews centered on major themes such as the fundamental principles of variational methods, the theoretical aspects related to key theorems and their numerous variants, and various problems in mathematical physics that are solved using these approaches. Both theoretical developments and applications are included in order to describe important real and concrete phenomena. The main topics of this Reprint are: Fundamental variational principles, their variants, related results, and applications; Minimax, mountain pass, and saddle-point type theorems and their applications; Major problems in mathematical physics that have been addressed using the above types of results; Numerical methods enabling the transition from the aforementioned theory to the construction of solutions for mathematical physics problems that arise from the modeling of real phenomena. Tracing this general line from the most abstract framework to the development of effective solutions for real-world models highlights the importance of such a collection of works, as it represents a key pathway to scientific knowledge. The novelty lies in the articulation of this perspective, and I believe that this Reprint can meaningfully complement the existing scientific literature in the field.



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