Optimization of Fourth Order Discrete-Approximation Inclusions

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Abstract : The paper concerns the necessary and sufficient conditions of optimality for Cauchy problem of fourth order discrete (PD) and discrete-approximate (PDA) inclusions. The main problem is formulation of the fourth order adjoint discrete and discrete-approximate inclusions and transversality conditions, which are peculiar to problems including fourth order derivatives and approximate derivatives. Thus the necessary and sufficient conditions of optimality are obtained incorporating the Euler-Lagrange and Hamiltonian forms of inclusions. Derivation of optimality conditions are based on the apparatus of locally adjoint mapping (LAM). Moreover in the application of these results we consider the fourth order linear discrete and discrete-approximate inclusions.
Keywords : difference, optimization, fourth, approximation, transversality