عنوان مقاله:

OPTIMAL CONTROL OF PUMPING STATIONS IN OPEN CHANNELS BY METAHEURISTIC FIREFLY ALGORITHM

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خلاصه مقاله:

Optimum control of upstream pumping station in open channels with given constraint in downstream end is presented in this paper. The upstream control is capable of minimizing water level fluctuations in the channel in which the downstream pumping station causes an undesirable wave. The proposed method combines an unsteady non-uniform flow solver with shock-capturing capability, Fourier series and metaheuristic firefly algorithm. Fourier series is used to estimate the optimum inflow control and firefly algorithm is utilized to determine the unknown coefficients in the series. With a suitable objective function, the procedure generates the optimum inflow hydrograph that can effectively cancel destructive downstream waves. The results have been compared with the results obtained by a variational approach and show satisfactory improvement both in simplicity and the value of objective function.

کلمات کلیدی:

Optimal control; Unsteady open channel flow; Pumping stations; Firefly algorithm

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