

عنوان مقاله:

Combination of gradually varied flow theory and simulated annealing optimization in of manning roughness coefficient

محل انتشار:

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خلاصه مقاله:

Manning roughness coefficient is one of the most important parameters in designing water conveyance structures. Unsuitable selection of this coefficient brings up some mistakes. This research aims to present a method to determine the Manning roughness coefficient based on a combination of optimization algorithm of simulated annealing (SA) with gradually varied flow equations. Therefore, in a lab rectangular flume of 12 m, 60 cm and 65 cm in length, width and height with fixed channel bed slope of 0.0002, nine series of water level profiles were carried out. Then, an objective function based on observed and calculated water level gradient was defined to decide on manning roughness coefficient while it was minimized with simulated annealing optimization method. The values of objective function parameters were discussed by sensitivity analysis and the most optimal objective function was obtained. To measure the accuracy of coefficient obtained, Statistics indices of R², Root mean square error (RMSE), Mean bias error (MBE), d were used. The results showed that manning roughness coefficient has a great accuracy

کلمات کلیدی:

Manning roughness, Simulated annealing algorithm, Gradually varied flow, Nonlinear optimization

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