

عنوان مقاله:

Durability Based Optimization of Gravity Strcuture Dams by ABC Optimization Algorithm

محل انتشار:

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خلاصه مقاله:

An efficient methodology is proposed to find the optimal shape of gravity dams including fluid structure interaction subject to earthquake ground motion. In order to reduce the computational cost of optimization process, an adaptive artificial bee colony algorithm (ABC) is built to predict the dam effective response instead of directly evaluating it by a time-consuming finite element analysis (FEA). In this paper, a visual operation interface and a main program for computation are developed on the basis of constrained nonlinear complex optimization algorithm, Visual Studio programming language and parametric drawing techniques. They mainly help solve such problems as multi-state constraints and complexity of programs in optimal design of gravity dam section. The computing results show that the newly developed program is of high accuracy. While improving computation efficiency, it can also enhance human-computer interaction. In this research use SIMULIA Abaqus for gravity dam structural FEM analysis and C# programming for ABC algorithm by conducting data exchange by PARIS algorithm.

کلمات کلیدی:

gravity dam; optimization; artificial bee colony

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