



Seepage Safety Monitoring Model and Monitoring Index Calculation of CFRD with Cracks Based on Evolving RBFNN and Cloud Model

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There is lagging effect in the effect of reservoir water level and rainfall on seepage of concrete face rockfill dam. The traditional regression model usually simulates the influence of water level and rainfall in the early stage based on experience, but it is not suitable. To solve this problem, the normal distribution curve is used to simulate the lagging effect of water level and rainfall on dam seepage. In view of problem of concrete face slab cracks, the influence of cracks on seepage is analyzed. In this paper, a safety monitoring model for CFRD seepage with cracks considering lagging effect is proposed, in which face cracks are considered as an influencing factor of seepage. The Radial Basis Function Neural Network (RBFNN) based on Genetic Algorithm (GA) optimization is studied. The RBFNN optimized by GA is used to establish a safety monitoring model for a CFRD's seepage. Seepage of the dam is predicted by this model, whose results are similar to the monitoring data, which indicates that the method has certain applicability. Through the analysis of the proportion of factors affecting CFRD's seepage, it is found that the rainfall component has the greatest impact on the total seepage, accounting for more than 50%, and the crack component accounts for about 10% of the total seepage. Finally, through the cloud model, the monitoring index of the CFRD's seepage is worked out, which has certain guiding significance for the treatment of abnormal seepage monitoring data.