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## Dam Deformation Prediction Based on EEMD-ELM Model

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Establishing a reasonable and reliable dam deformation monitoring model is of great significance for effective analysis of dam deformation monitoring data and accurate assessment of dam working conditions. Firstly, the dam deformation is decomposed by the EEMD algorithm to obtain IMF components representing different characteristic scales, and different influencing factors are selected for different IMF components. Secondly, each IMF component is used as the ELM training sample to analyze, fit and predict the dam deformation component. Finally, the prediction results of each IMF component are accumulated to obtain the dam deformation prediction value. Taking a roller compacted concrete gravity dam as an example, the EEMD-ELM model is used to predict the deformation of the dam. At the same time, it is compared and analyzed with the prediction results of the BPNN model and the ELM model. The mean square error of the EMD-ELM model is 0.566, which is 54% and 14.8% lower than the BPNN model and the ELM model, indicating that the EEMD-ELM model has higher prediction accuracy and has certain application value.

**Key words:** dam deformation; prediction model; ensemble empirical mode decomposition; extreme learning machine