

Seismic Vulnerability Analysis of Continuous Beam Bridges Based on Multivariate Copula Function

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Abstract : In order to overcome the problem of low precision caused by a single typical component, which is chosen to represent the overall fragility in the standard analysis, the continuous beam bridge is considered as a ternary system consisting of pier, abutment bearing, and pier bearing. After the main components undergo the seismic fragility analysis, the copula function in multivariate form is introduced. Based on the computation of the main components' fragility curves and the evaluation of the correlation between the main components, a method to solve the seismic vulnerability of ternary component systems is established.

Keywords : copula function, seismic fragility analysis, damage index, joint probability distribution function

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