

ABSTRACT

Many dams in Algeria are made of concrete and are usually located in areas prone to seismicity. It is therefore essential to estimate the rate of damage to the dams in case of an earthquake of a given intensity. To do this a study on the gravity dam of Oued El Fodda, located in the region of Chlef is performed. The finite element method is used to model the dam and take into account the different interactions between the dam, the reservoir and the foundation. The fragility curves are then generated using nonlinear temporal dynamics analyzes to assess four limit states damage: the fracture of the material concrete (at the top of the dam), the slip at the dam-foundation interface. The displacement at the top of the dam and the fracture of the material concrete (at the dam heel). The uncertainties associated with the modeling parameters and seismic load are included in the fragility analysis and fragility of these sources of uncertainty are propagated using a sampling method. A sensitivity analysis was also conducted to assess the model parameters that have significant influence on the seismic response of the structure.

Keywords : fragility curves, near-far faults earthquake, concrete gravity dam, sensitivity analysis, seismic vulnerability.