

# ABSTRACT

Bridges are one of the most vulnerable components of a transport network subjected to seismic excitations. This network is indeed essential for carrying out rescue and economic activities, quickly following a seismic event. A considerable negative effect of closing these transportation networks can be observed on the country's economic growth, after an earthquake. However, developing an appropriate methods, capable of assessing the seismic performance of the bridges is necessary for the elaboration of action plans to prevent the seismic risk.

A performing tool to evaluate the seismic vulnerability of RC and prestressed bridges is the development of fragility curves; they express the probability of structural damage due to earthquakes as a function of ground motion indices.

In this study, we developed the analytical fragility curves of a constructed current RC bridges in Algeria. A three dimensional model has been implemented, incorporating all components, piers, abutments, elastomeric bearings and shear keys.

The studied bridges located in Bousmail-Cherchell highway, which is classified according to the RPOA-2008 in the highest level of seismicity (Zone III).

**Keywords:** Fragility curves, Non Linear Analysis, Seismic Vulnerability.