

**A new computational platform of structural reliability analysis  
developed by coupling FERUM and OpenSees**

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**ABSTRACT**

A structural reliability analysis employing a sampling-based technique such as Monte Carlo simulation (MCS) may require a significant amount of time, particularly when dealing with a complicated structural problem (Moon *et al.* 2018). In this paper, a new computational platform of structural reliability analysis is proposed. By coupling sophisticated software packages of reliability analysis (FERUM) and structural analysis (OpenSees), the computational platform enables an efficient analysis of structural reliability. In addition, it employs the first order reliability method (FORM), which provides useful byproducts as well as probabilities. It is applied to a numerical example and the corresponding analysis results are compared with those by MCS, demonstrating that the proposed platform allows us to perform a structural reliability analysis in an accurate and efficient manner.

**REFERENCES**

Moon, D.-S., Lee, Y.-J. and Lee, S. (2018), "Fragility analysis of space reinforced concrete frame structures with structural irregularity in plan", *J. Struct. Eng.*, **144**(8), 04018096.

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