

Mitsuru MURASE and Izuru TAKEWAKI, Reliability-based design optimization for building-connecting inertial-mass damper, *J. Struct. Constr. Eng., AIJ*, Vol. 88, #805, 437–446, Mar., 2023 (in Japanese, but see fig.1).

Abstract In this paper, we propose an accurate and efficient reliability evaluation method for robust design optimization using a probabilistic approach. First, we verify the validity of this method using two benchmark functions. Then, we apply this method to the robust design optimization problem of building-connecting damper parameters and verify the effect of robust design. We consider the variation of the natural period and structural damping ratio of buildings, and directly evaluate the criteria satisfaction rate (CSR) using the response value calculated by time-history response analysis.

Keywords Variability analysis, Reliability-based design optimization, Robustness, Inertial mass damper, Building-connection vibration control.