

Stochastic models in structural reliability

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Stochastic models of basic variables used in various studies of structural reliability are significantly different. Obviously, the reliability studies may then lead to dissimilar results and undesirable discrepancies in recommendations concerning the partial safety factors, combination factors and other reliability elements.

The present papers aims to summarize and propose conventional stochastic models in order to enable an efficient comparison of reliability studies of various structural members made of different materials (steel, concrete, composite). Proposed models represent average values of action properties, common structural conditions and normal quality control of material properties. Stochastic models of basic variables presented in the paper are intended to be used as prior theoretical models that could be accepted for general reliability studies and calibration procedures in connection with foreseen revisions of national codes.

Examples of combinations of time-variant actions illustrate applications of recommended stochastic models.