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СТАТИСТИЧЕСКИЕ ХАРАКТЕРИСТИКИ ПОГРЕШНОСТИ ЧИСЛЕННЫХ МОДЕЛЕЙ НЕСУЩЕЙ СПОСОБНОСТИ ДЛЯ СТАЛЬНЫХ ЭЛЕМЕНТОВ

***Аннотация.** Применение численных моделей для оценки несущей способности и эксплуатационной пригодности как новых, так и существующих строительных конструкций является одним из наиболее важных достижений последних десятилетий для инженеров-строителей. Численная модель, как и любая другая модель, обладает погрешностью, которую необходимо установить и учесть при обеспечении проектной (конструкционной) надёжности конструкций. При этом статистические характеристики погрешности численных моделей остаются наименее изученными. Целью исследования является развитие и научное обоснование проектирования на основе численных моделей несущей способности. Объектом исследования являются параметры численных моделей и статистические характеристики погрешности (неопределённости) численного результата. Основные задачи тематического исследования включают (i) анализ чувствительности несущей способности от вариаций параметров численных моделей, (ii) верификацию параметров численных моделей на основе экспериментальных данных и (iii) вычисление статистических характеристик погрешности численной модели, предполагаемых в дальнейшем к использованию при развитии формата безопасности и нормировании значений частных коэффициентов надёжности.*

***Ключевые слова:** численная модель несущей способности, формат безопасности, надёжность, неопределённость, погрешность моделирования, метод конечных элементов.*

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STATISTICAL CHARACTERISTICS OF THE NUMERICAL MODEL UNCERTAINTIES FOR STEEL ELEMENTS

***Abstract.** The use of numerical models to assess the resistance (load bearing capacity) and serviceability of new and existing structures is one of the most important achievements of recent decades for civil engineers. The numerical model, like any other model, has uncertainties that need to be established and taken into account when ensuring the structural reliability. At the same time, the statistical characteristics of the uncertainty of numerical models remain the least studied. The purpose of the study is to develop and scientifically substantiate the design based on numerical models of load-bearing capacity. The object of the study is the parameters of numerical models and statistical characteristics of the uncertainty of the numerical result. The main objectives of the case study include: (i) analysis of the sensitivity of the results from variations in the parameters of numerical models; (ii) verification of the parameters of numerical models based on experimental data; (iii) calculation of statistical characteristics of the uncertainty of the numerical model, which are expected to be used in the future in the development of the safety format and the normalization of the values of partial reliability factors.*

***Keywords:** numerical model of load-bearing capacity, safety format, reliability, uncertainty, modeling error, finite element method.*

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