Miroslav Vořechovský serves as a full professor at the [Institute of Structural Mechanics](http://www.stm.fce.vutbr.cz), which is a part of [Faculty of Civil Engineering](http://www.fce.vutbr.cz/EN/) at [Brno University of Technology](http://www.vutbr.cz/?set_lang=1&lang=0/), Czech Republic.

His research interests include nonlinear fracture mechanics with focus on probabilistic aspects, size effects and scaling of structural strength, multiscale approaches to mechanics of fibers, yarns and fiber-reinforced composites with cementitious matrix.

He also focuses on developing efficient methods for reliability computations in engineering, such as stochastic optimization techniques, Monte Carlo integration, sampling techniques for random variables, vectors and fields and the related problems in statistics and probability (extremes value theory for random variables and random fields).

Lecture title of 96th doctoral seminar 14:00-14:45:

Sampling strategies for computer experiments

Lecture title of 97th doctoral seminar 14:45-15:30:

Introduction to modeling spatial variability by random fields

The first lecture will cover: Motivation for space filling designs and variance reduction techniques, LHS, correlation control over LHS, sample size extension (HLHS), Audze Eglais criterion, Phi criterion and Maximin criterion and their modification (fix) by introduction of a new metric (periodicity), design generation by dynamical simulation of interacting particles.

The second lecture will introduce random fields, simulation techniques for Gaussian random fields with emphasize on Karhunen Loeve expansion, interpolation and Kriging, split of the eigenvalue problem in higher dimension with a separable autocorrelation function, estimation of random fields, sampling of nongaussian random fields by translation models, simulation of cross correlated random fields.