

invites you to the lecture

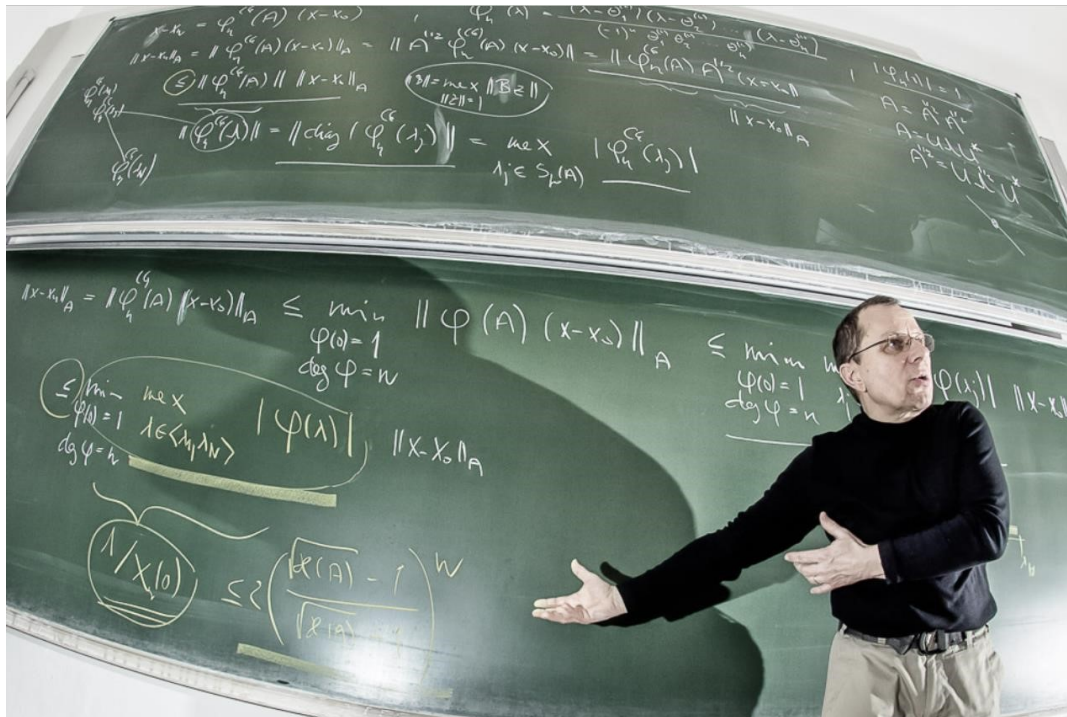


Photo: Petr Jan Juračka

## Prof. Ing. Zdeněk Strakoš, DrSc.

Faculty of Mathematics and Physics, Charles University, Prague

### Krylov subspace methods, minimal polynomials, and clustering of eigenvalues: Intriguing relationships and motivating challenges

**Abstract.** Since Krylov subspace methods can be formulated using polynomials satisfying certain orthogonality/optimalty properties, it is natural to use in the description of their behaviour arguments involving minimal polynomials of the system matrix and clustering of the matrix eigenvalues. Nonlinearity of the underlying phenomena however makes the relationships very subtle and the argumentation intriguing. This contribution will attempt to review the topic with presenting the circumstances where the minimal polynomial and eigenvalue clustering arguments provide the rigorously justified insight. On the other hand, we present limitations and theoretical challenges related their general use. They can motivate further research and lead to a step towards better understanding of the Krylov subspace methods behaviour.

December 4, 2019, 1pm

conference hall, Studentská 1768, Ostrava-Poruba