PhD research topic proposal
BME, Doctoral School of Mathematics and Computer Science

Name of supervisor: János Karátson

Degree: Professor, D.Sc.

Title of the topic: Qualitative properties of extended finite element methods

Short description: The standard finite element method (FEM) has a lot of extensions that have been developed recently to follow physical or engineering requirements inreal-life problems. Whereas a lot of qualitative properties of the standard FEM, such as nonnegativity preservation or discrete maximum principles, are known to hold under proper conditions, such results are not yet discovered for the extended versions. The goal of the planned research is to establish such qualitative results for some extended FEMs.

Requirements: A solid background in the theory and programming of numerical methods for PDEs.

A good level of English knowledge.

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Place of work: Dept. of Analysis