

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

**Name of supervisor :**

Á. P. Horváth

**Degree:**

PhD

**Title of the topic:**

Exceptional orthogonal polynomials

**Short description:**

Exceptional orthogonal polynomials are complete systems of polynomials with respect to a positive measure. They are different from the generalized orthogonal polynomials, for instance Freud or generalized Jacobi polynomials, since they are the polynomial eigenfunctions of a Sturm-Liouville operator as the classical (Hermite, Laguerre, Jacobi) families. They also differ from the classical orthogonal polynomials since there are a finite number of degrees for which the second order differential operator in question has no polynomial eigenfunction. That is an exceptional orthogonal polynomial family has finite codimension in the space of polynomials.

Since the topic is at most twenty years old there are several unsolved problems which are worth studying.

**Requirements:**

analysis

**Contact:**

Phone:

E-mail:

**Place of work:**

Department of Analysis