

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

Name of supervisor :

Dr. Szabó Szilárd

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Degree:

PhD

Title of the topic:

Ramified Geometric Langlands correspondence

Short description:

The classical Langlands correspondence has a Geometric analog due to Drinfeld and Laumon. Originally a major conjecture in number theory, its Geometric version lies on the crossroads of Algebraic Geometry and Representation Theory. In technical terms, the Ramified Geometric Langlands conjecture states an equivalence of categories between the derived category of D-modules over the moduli space of G-bundles with level structure over a curve and a full subcategory of the derived category of coherent sheaves over the moduli stack of Stokes-local systems for the Langlands dual group over the same curve, such that irreducible local systems correspond to Hecke-eigensheaves. The non-ramified Geometric Langlands correspondence has been verified in a number of cases, and the ramified version was proven in the untwisted Painlevé cases by Arinkin and Fedorov. The aim of the prospective PhD student is to extend their proof first to the twisted Painlevé cases, then possibly to other cases of interest.

Requirements:

Strong background in Geometry and Group theory.

Contact:

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Place of work:

BME (BUTE)

Statement: *The conditions of the research above are satisfied, the theme is confirmed by the Head of the Department/Institute*