

Miklós Eper

**Title:** Geometric  $P=W$  conjecture in rank three case, on the three-punctured sphere

**Abstract:** We describe the moduli space of gauge-equivalence classes of rank three Higgs bundles on the complex projective line with three logarithmic points, called the Dolbeault space, and also the corresponding character variety with structure group  $SL(3, \mathbb{C})$ , called the Betti space. Our result is that the Geometric  $P=W$  conjecture holds in this setup, which asserts the existence of a homotopy commutative diagram between these spaces. Therefore we determine the homotopy type of the compactifying divisor of the Betti space, and describe the asymptotic behaviour of the non-abelian Hodge correspondence and Riemann-Hilbert correspondence, connecting the Dolbeault and Betti spaces.

Joint work with my supervisor, Szilárd Szabó.