Canonical representations of surface groups

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MAGNTS 2025

Abstract: A canonical representation of rank r on a genus g surface with n punctures is a local system with finite orbit under the mapping class group action. Algebraic solutions to the Painlevé VI differential equation correspond to canonical representations in the case that $g = 0, n = 4$, and $r = 2$. For general g, n, and r, such canonical representations also correspond to algebraic solutions to certain differential equations. We will describe joint work with Josh Lam and Daniel Litt where we classify canonical representations in many more cases.