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An isomonodromy interpretation of the elliptic Painlevé equation

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Abstract

The most fundamental property of the Painlevé differential equations is the fact that their solutions parametrize families of linear differential equations with constant monodromy. There are a number of discrete analogues of the Painlevé equations, culminating in Sakai’s elliptic Painlevé equation, but only at relatively low levels has the corresponding isomonodromy interpretation been understood so far. I’ll explain recent **joint work with Arinkin and Borodin** in which we give a new construction of Sakai’s equation as “isomonodromy” transformations of certain elliptic difference equations.