

On the Geometry of Difference Painlevé Equations

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Essentially by definition, a discrete Painlevé equation is a translation element in the extended affine Weyl symmetry group of a certain algebraic surface called the Okamoto space of initial conditions of the equation. Such elements can be represented as compositions of elementary reflections and Dynkin diagram automorphisms. In this talk we will discuss how to use such decompositions and the corresponding elementary birational transformations of the underlying Okamoto surface to compare different equations (directions), to find explicit identification between them, and to obtain good coordinate representations of these equations. This study is motivated by our attempts to understand the structure of difference Painlevé equations that appear as reductions of elementary Schlesinger transformations of Fuchsian systems.

Joint work with T. Takenawa.

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