

Detecting integrability in discrete systems

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The behaviour of solutions of differential equations in the complex domain has long been used as a detector of integrability. In particular, the Painlevé property is often used to identify PDEs solvable by the inverse scattering method. In this talk, complex analytic and number theoretic properties of solutions of discrete equations will be discussed that correlate well with integrability. Classification results will be presented showing how these properties naturally single-out the discrete Painlevé equations from more general classes of equations.

References and Literature for Further Reading

- [1] A. Al-Ghassani and R.G. Halburd, Height growth and a discrete Painlevé equation (in preparation)
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- [3] R.G. Halburd and R.J. Korhonen, Finite-order meromorphic solutions and the discrete Painlevé equations, *Proc. London Math. Soc.*, **94** (2007) 443–474.