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Computing the invariants of discrete dynamical systems of order two*

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Abstract

We review te method of computing invariants for discrete dynamical systems in a birational form (mappings). It is shown that after elimination of singularities by blow ups the mapping is lifted to an automorphism of a rational elliptic surface. The linear action of the bundle mapping on the Picard group of the surface makes possible the computation of the invariant as the strict transform of the eigenvalue one divizor.

MSC: 37FXX, 14H52, 14H70

keywords: discrete dynamical systems, blow up, rational elliptic surfaces, divisors

1 Introduction

Discrete integrability is a very hot topic today in the theory of completely integrable systems. Although it started with the study of lattice (partial difference) soliton equations, gradually it has been focusing on discrete ordinary discrete equations called mappings. Here the methods of soliton theory which enabled the study in the case of lattice equations are not working anymore.

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