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On the separatrix graph of a rational vector field on the Riemann sphere

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Abstract

We consider the rational flow $\xi_R(z) = R(z)(d/dz)$ where R is given by the quotient of two polynomials without common factors on the Riemann sphere. The separatrix graph Γ_R is the boundary between trajectories with different properties. We characterize the properties of a planar directed graph to be the separatrix graph of a rational vector field on the Riemann sphere.
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1. Introduction

Complex differential equations have been playing an important role both in theoretical and in applied mathematics. Therefore, the study of these continuous dynamical systems could be interesting for wide areas of knowledge, from complex geometry to fluid dynamics. In this work

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