ON SEMICONJUGATE RATIONAL FUNCTIONS

Let A, B be two rational functions of degree at least two on the Riemann sphere. The function B is said to be semiconjugate to the function A if there exists a non-constant rational function X such that the equality

$$A \circ X = X \circ B \tag{1}$$

holds. The semiconjugacy relation plays an important role in the classical theory of complex dynamical systems as well as in the new emerging field of arithmetic dynamics. In the talk we present a description of solutions of (1) in terms of two-dimensional orbifolds of non-negative Euler characteristic on the Riemann sphere. As an application, we provide new results about the classical problem of description of commuting rational functions to which equation (1) reduces for $A = B$.