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Title: Exponentially small splitting of separatrices near a resonant elliptic fixed point

Abstract:

Suppose that one parametric analytic family of area preserving maps has an elliptic fixed point and that for some value of the parameter the multiplier of this point passes through the cubic root of the unity. The classical results state that generically the fixed point loses stability at this value of the parameter. The classical normal form is integrable and predicts that a period three hyperbolic orbit bifurcates from the elliptic fixed point. The separatrices of the period three point form a triangle which surrounds the elliptic point. On the other hand, it is expected that generically separatrices of the original map are split and have transversal intersections. In this talk we discuss an asymptotic formula which describes the size of the separatrices splitting and explore relations to the method of complex matching and Stokes phenomena.