

Hyperbolic Area and Sullivan's No-Wandering-Domain Theorem: A New Proof and Further Developments

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Time: Wednesday, Nov. 18th, 14:30
Venue: Room 102, SCMS

Abstract:

Sullivan's no-wandering-domain theorem asserts that, for every rational map of degree at least two in one complex variable, each Fatou component is eventually periodic. In this talk, I will present a new proof based on hyperbolic area, without using quasiconformal techniques.

I will then discuss further developments of this method. In particular, we resolve a long-standing open question dating back more than 40 years, proving that transcendental entire and meromorphic functions have no bounded-orbit wandering domains. (This is joint work with Kostiantyn Drach, Leticia Pardo-Simón, Nikolai Prochorov, Lasse Rempe, Beno Učakar, and James Waterman.)

Finally, I will discuss an extension of the method to higher-dimensional holomorphic dynamics. We establish the absence of bounded-orbit wandering domains for elliptic skew products. As a consequence, we completely resolve the local no-wandering-domain problem for polynomial skew products near elliptic invariant fibers.