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Normalization of bundle holomorphic contractions and applications to dynamics. (English)

Zbl 1151.37038

Ann. Inst. Fourier 58, No. 6, 2137-2168 (2008).

Summary: We establish a Poincaré-Dulac theorem for sequences $(G_n)_{n \in \mathbb{Z}}$ of holomorphic contractions whose differentials $d_0 G_n$ split regularly. The resonant relations determining the normal forms hold on the moduli of the exponential rates of contraction. Our results are actually stated in the framework of bundle maps. Such sequences of holomorphic contractions appear naturally as iterated inverse branches of endomorphisms of $\mathbb{C}P^k$. In this context, our normalization result allows to estimate precisely the distortions of ellipsoids along typical orbits. As an application, we show how the Lyapunov exponents of the equilibrium measure are approximated in terms of the multipliers of the repulsive cycles.

MSC:

- 37F10** Dynamics of complex polynomials, rational maps, entire and meromorphic functions; Fatou and Julia sets
37G05 Normal forms for dynamical systems
32H50 Iteration of holomorphic maps, fixed points of holomorphic maps and related problems for several complex variables

Cited in **15** Documents

Keywords:

normal forms; Poincaré-Dulac theorem; Lyapounov exponents; bundle maps

Full Text: [DOI](#) [Numdam](#) [EuDML](#)

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