

**Normal forms of commuting singular holomorphic vector fields
with linear parts having Jordan blocks**

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Abstract. We study simultaneous normal forms of d -actions (and the corresponding d -dimensional Lie algebras) defined by commuting singular holomorphic vector fields in \mathbb{C}^n fixing the origin with nontrivial Jordan blocks in the linear parts. We prove the analytic convergence of a formal linearizing transformation under a certain invariant geometric condition (cone condition) for the spectrum of d vector fields generating a Lie algebra. If the condition fails and if we consider the situation where the small denominator occurs, then we show the existence of divergent solutions of an overdetermined system of linearized homological equations. Geometrical aspects of the simultaneous normal forms with non-diagonalizable linear parts are also investigated. The results are obtained in collaboration with M. Yoshino (Hiroshima University).