

Local monodromy and the numerical local irreducible decomposition

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The local structure of a holomorphic subvariety at a given point is described by its local irreducible decomposition. Following the paradigm of numerical algebraic geometry, an algebraic subvariety at a point is represented by a numerical local irreducible decomposition comprised of a local witness set for each local irreducible component. The key requirement for computing a numerical local irreducible decomposition is to compute the local monodromy action of a generic linear projection at the given point, which is always well-defined on any small enough neighborhood. This talk will characterize some of the behavior of local monodromy action of linear projection maps under analytic continuation, allowing computations to be performed beyond a local neighborhood. With this characterization, this talk will describe an algorithm for computing the local monodromy action and corresponding numerical local irreducible decomposition for algebraic varieties. The results will be illustrated using several examples facilitated by an implementation in an open source software package.

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