

Numerical Computation of Stokes Multipliers

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The Stokes phenomenon for a linear differential system with an irregular singularity at zero is the appearance of distinct sector-dependent analytic solutions that are asymptotic to a single formal solution. To each anti-Stokes direction there is a Stokes matrix which is a meromorphic invariant for the system. The Stokes matrices are, in general, transcendental with respect to the coefficients of the differential system. As we do not have an algebraic method for finding the Stokes Multipliers, we turn to numerical manipulation of examples for insight.

The aim of this lecture is to show how to numerically compute the Stokes matrices by means of a recursion process in some “simple” cases.