The quasi-solution method of global analysis of ODEs

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I will describe a new technique developed for addressing difficult questions in differential systems. These include connection problems and more general properties of linear or nonlinear systems, non-self-adjoint spectral questions and others. The technique combines results of transseries and Borel summability with more classical functional analysis tools.

As applications I will discuss the solution to the Dubrovin conjecture as well as the proofs of nonlinear blow up in supercritical Yang Mills and Wave Maps.

Based on joint papers with with I. Glogic, X. Xia, S. Tanveer (OSU), M. Huang, W. Schlag (U Chicago) and R. Donninger (U Vienna).