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Categorified isomonodromic deformations via Lie groupoids

Given a meromorphic connection on a Riemann surface, one can seek deformations of the connection in which the locations of the poles are varied but the monodromy and Stokes data are held fixed. The solutions of this “isomonodromy problem” are unique up to isomorphism and can often be written explicitly in terms of special functions, such as the Painlevé transcendents. I will describe joint work with Marco Gualtieri in which we categorify this picture, promoting the classical special functions to functors using the theory of Morita equivalence for Lie groupoids. The Morita equivalences in question are themselves the solutions of an isomonodromy problem—the one for which the initial condition is the meromorphic projective connection provided by the uniformization theorem.