

Riemann-Hilbert problems and algebraic curves
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We review the classical theory of the Riemann-Hilbert problem, that is the reconstruction of a Fuchsian differential equation with a given set D of singular points and a given monodromy representation of the fundamental group of the complex plane minus the set D . Existence theorems provide the class of monodromy representations for which the Fuchsian differential equations can be reconstructed. In general, among the solvable cases, the solution of the matrix Riemann-Hilbert problem cannot be computed analytically in terms of known special functions, nevertheless there are special cases when this happens. These cases are often met in applications. We discuss one of these cases: the situation in which the Riemann-Hilbert can be solved in terms of theta functions.