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“Resurgence, WKB and strings”

The WKB method has played a fundamental role in the development of quantum mechanics. In the 1980s and 1990s, and largely under the influence of Ecalle’s theory of resurgence, it was upgraded to the exact (or complex) WKB method. More recently, developments in supersymmetric gauge theory and string theory have provided a new perspective on this venerable subject. In this talk I will review the basic ingredients of the exact WKB method and present new results inspired by gauge theory/string theory. I will show in particular that the work of Gaiotto-Moore-Neitzke on BPS states provides an elegant solution of the exact WKB method as applied to arbitrary polynomial potentials. I will also discuss some open problems in the subject.