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Computations in Moduli Spaces

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Abstract. Today the techniques related to Riemann surfaces are widely used in different branches of mathematics, theoretical physics, industry and even in medicine. Unfortunately, many achievements of the theory remain on paper since theoretical formulae contain special functions that few scholars try to compute. In the present note we describe several useful techniques for the solution of equations in the moduli spaces of algebraic curves. Conceptually all the methods we talk about belong to the 19th century but their actual implementation have become possible only with the invention of the computer.

Keywords. Riemann surfaces, moduli, computations, Schottky uniformization, Poincare series, variational formulae.

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