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Perturbative connection formulas for Heun equations

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We recover the predictions of CFT regarding the connection formulae for the family of Heun equations. Two methods of derivation of the connection coefficients are employed: the theorem of Schäfke and Schmidt that allows for a rigorous proof in some cases, as well as the analysis of the asymptotic behavior of the Floquet solutions. Both methods yield closed formulas in terms of continued fractions which can be compared with the results obtained from CFT by means of Zamolodchikov conjecture. We will review two simple cases of the application of these methods: the reduced confluent Heun equation and the Mathieu equation

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