

Algebraic Heun Operators

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Abstract

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We consider the Heun operator, the second order differential operator with four regular singular points. We are interested to find conditions for which the associated ordinary linear differential equation has a full set of algebraic solutions.

In this case, we see the corresponding Heun operators as pull-backs by Belyi functions of algebraic hypergeometric operators. We search for these functions by finding their corresponding dessin d'enfant. We find some infinite families of dessins d'enfants parametrized by the number of edges.

References

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LMFDB, the database of L-functions, modular forms, and related objects - <https://beta.lmfdb.org>