

Alcune osservazioni su una congettura di Dwork

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A classical theorem of Klein characterizes the second order differential operators on algebraic curves having finite projective monodromy, as pull-backs of hypergeometric operators in the basic Schwarz list. On the other hand, if S is the set of all second order elements of $\mathbb{C}(X)[D]$ having given Riemann data, parametrized by a certain number of accessory parameters, B. Dwork raised the question of the shape of the subset $S' \subset S$ corresponding to equations with a full set of algebraic solutions. There are also more explicit formulations of this problem, for example the finiteness of the set of elliptic curves admitting a Lamé operator with fixed finite projective monodromy.

We take advantage of the topological and combinatorial properties of the finite covers of the projective line, in particular of the Belyi functions, in order to deduce this type of results, with a significant gain in effectivity. In particular, we reobtain some results of F. Baldassarri and B. Chiarellotto in the case of the Lamé operators.