

1077-12-932

Yuri Burda* (yburda@math.toronto.edu). *Topological Methods in Klein's Resolvent Problem.*

Klein's resolvent problem asks whether using a rational substitution $y = R(z, a_1, \dots, a_n)$ the equation

$$z^n + a_1 z^{n-1} + \dots + a_n = 0$$

can be transformed into an algebraic equation on y depending on a small number k of parameters.

Many tools have been applied to achieve progress in this problem: low-dimensional algebraic geometry (n=5: Kronecker, Klein, n=6: Serre, n=7: Duncan), valuation theory (Buhler, Reichstein), Galois cohomology (Serre).

Arnold suggested in the 70's to approach the problem by studying the complexity of the covering realized by the multi-valued function z over the space of its parameters.

Developing this idea we propose a topological method based on the notion of Parshin neighborhood of a flag and topological results on coverings over tori. With this method we prove a bound $k \geq \lfloor n/2 \rfloor$ in the original problem and obtain estimates in similar questions. We prove for instance that for a generic algebraic function depending on k parameters of degree at least $2k$ the number of parameters can't be reduced at all. (Received September 14, 2011)