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Abstracts of Short Communications and Posters

Section:

4. Algebraic Geometry

1991 MS Classification: 14, 34, 35

Brezhnev, Yurii, Kaliningrad State University, Russia

Gröbner bases and elliptic solitons

Solving of spectral problems with elliptic potentials for ODE's or system is considered. In its frame the main subproblems are known: 1) search of integrable (finite-gap) potentials, 2) computing of correspondent algebraic curve and 3) problem of covering of torus. We show that they are reduced to pure algebro-geometric problem: solution of polynomial equation system, which can be solved using powerful modern algorithms – Gröbner basis method in theory of polynomial ideals, characteristic sets one and others. New integrable potential with *free* location of poles has been obtained.

Programm package for analytical and numeric Weierstrass's theory of elliptic functions was created for automation of calculations. Maple programming language is used.