

Brezhnev, Yu. V.

On Dubrovin equations for finite-gap operators. (English. Russian original) [Zbl 1098.34579](#)
Russ. Math. Surv. 57, No. 2, 415-417 (2002); translation from *Usp. Mat. Nauk* 57, No. 2, 191-192 (2002).

From the text: In [*N. V. Ustinov* and *Yu. V. Brezhnev*, *Russ. Math. Surv.* 57, No. 1, 165–167 (2002); translation from *Usp. Mat. Nauk* 57, No. 1, 167–168 (2002; [Zbl 1098.34580](#))] the following universal property of finite-gap potentials was discovered: they form a class for which the spectral problem is integrable in quadratures. There it is shown how to obtain all the ingredients of the direct spectral problem: the Ψ -formula, the algebraic curve, the Novikov equations, and their integrals. Once Ψ is known it is natural to expect that the equations at its zeros $\gamma_k(x)$ should be obtainable on the basis of elementary considerations. This happens to be the case, and we show how to solve the problem algorithmically in the presence of additional features: trace formulae and the Abel transformation.

MSC:

- [34L40](#) Particular ordinary differential operators (Dirac, one-dimensional Schrödinger, etc.) Cited in 1 Document
- [34L99](#) Ordinary differential operators
- [37K20](#) Relations of infinite-dimensional Hamiltonian and Lagrangian dynamical systems with algebraic geometry, complex analysis, and special functions

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