

# Real Hamiltonian forms of affine Toda field theories: spectral aspects

by V. S. Gerdjikov

(with G. G. Grahovski, and A. A. Stefanov.)

The talk is devoted to real Hamiltonian forms of 2-dimensional Toda field theories related to exceptional simple Lie algebras, and to the spectral theory of the associated Lax operators. Real Hamiltonian forms are a special type of reductions of Hamiltonian systems, similar to real forms of semisimple Lie algebras. The real Hamiltonian forms of affine Toda field theories related to exceptional complex untwisted affine Kac–Moody algebras are studied. Along with the associated Lax representations, we also formulate the relevant Riemann–Hilbert problems and derive the minimal sets of scattering data that uniquely determine the scattering matrices and the potentials of the Lax operators.

## References

- [1] V. S. Gerdjikov, G. G. Grahovski, A. A. Stefanov. Real Hamiltonian forms of affine Toda field theories: spectral aspects. *Theoretical and Mathematical Physics*, **212(2)**: 1053-1072 (2022); [arXiv:2205.03844v1 \[nlin.SI\]](#)