On monodromy in integrable Hamiltonian systems

Martynchuk, Nikolay

Propositions accompanying the PhD thesis

On monodromy in integrable Hamiltonian systems

Nikolay Martynchuk

1. Morse theory can be used to compute Hamiltonian monodromy.

   — Chapter 1

2. The Hamiltonian monodromy of an integrable system with a complexity 1 torus action can be computed in terms of the orbits with $\mathbb{S}^1$ isotropy.

   — Chapter 2

3. Fractional monodromy is naturally defined for Seifert fibrations. It is determined by the Euler number and the deck group of the fibration.

   — Chapter 3

4. The results of Chapter 3 on fractional monodromy and parallel transport extend to integrable Hamiltonian systems with complexity 1 torus actions.

5. The notion of scattering monodromy generalizes to non-integrable Hamiltonian systems.

   — Chapter 4

6. A proper choice of a reference Hamiltonian is important for the study of scattering invariants.

   — Chapters 4–5

7. Euler's two-center problem admits two reference Kepler Hamiltonians. For such reference Hamiltonians, there are non-trivial scattering invariants.

   — Chapter 5

8. "Man in other people is man's soul."

   — B. Pasternak, *Doctor Zhivago*