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On monodromy in integrable Hamiltonian systems

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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*