Polynomial integrability of the Hamiltonian systems with homogeneous potential of degree \(-2\)

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Abstract

We characterize the analytic integrability of Hamiltonian systems with Hamiltonian
\[
H = \frac{1}{2} \sum_{i=1}^{2} p_i^2 + V(q_1, q_2),
\]
having homogeneous potential \(V(q_1, q_2)\) of degree \(-2\).

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