ⓘ Info

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was created on June 6, 2025 1:44:06 AM,
was last modified on May 17, 2026 7:36:51 PM, and
was exported on September 7, 2026 3:31:18 PM.

Singular integrable flows

Definition. Singular integrable Hamiltonian flows

Let (M, ω) be a symplectic manifold and

$$f_1, \ldots, f_k \in \mathcal{C}^\infty(M)$$

such that

- *(independent ae)* $\mathrm{d}f_1, \ldots, \mathrm{d}f_k$ are linearly independent on T_p^*M for almost every $p \in M$
- *(pairwise in involution)* $\{f_i, f_j\} = 0$ for $i, j \leq \dim M/2$

then

if	**the flow of $f_1, \ldots, f_{\max\{\dim M/2, k\}}$ is called**
$k < \dim M/2$	(partially) k-integrable
$k = \dim M/2$	completely integrable
$k > \dim M/2$	super k-integrable
$k = \dim M$	maximally super-integrable

For points $p \in M$ for which $\mathrm{d}f_1, \ldots, \mathrm{d}f_k$ are linearly dependent are called **singularities**.

[1]

Current note has 0 direct children and 0 total descendants.

- structures based on sets
  - manifolds
    - $\mathbb{R}$-manifold symplectic
      - Hamiltonian vector fields on a symplectic manifold
        - Singular integrable flows

And it has 5 siblings.

- structures based on sets
  - manifolds
    - $\mathbb{R}$-manifold symplectic
      - Hamiltonian vector fields on a symplectic manifold
        - Integrable Hamiltonian flows
        - Singular integrable flows
        - Hamiltonian Lie group action on a symplectic manifold
        - Quantization of Hamiltonian Lie group action on a symplectic manifold
        - Probability states and flows of an Hamiltonian system

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1. https://youtu.be/DXfutvZL26Y?si=G-LuNImF5GY0e9FY ↩