DEFORMATIONS OF DARBOUX INTEGRABLE SYSTEMS AND PSEUDO ABELIAN INTEGRALS

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We consider small deformations of centers with generic Darboux first integrals. We show that the corresponding first Melnikov function vanishes identically if and only if the deformation is Darboux relatively exact. As corollaries we obtain:

(1) Darboux integrable centers form an irreducible component

(2) Lower bound for the number of limit cycles bifurcation from the center

(3) Françoise-Darboux algorithme for calculating the first non-zero Melnikov function.

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