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Abstract

We propose a new form of Lagrangian that shows branching for the associated Hamiltonian and has relevance to the quadratic type and mixed linear-quadratic Liénard-type nonlinear dynamical equations on adjusting the underlying parameters. Non-uniqueness of the Lagrangian is pointed out and a particular one when Fourier transform is demonstrated to depict a momentum-dependent quantum-like mass system when expanded binomially.

Keywords: Branched Hamiltonian · nonstandard Lagrangian

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We recommend

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