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The variational principle of Herglotz and related results. (English) Zbl 1382.70020


Summary: This is a review of the variational principle proposed by Gustav Herglotz and resent results related to it. In that variational principle the functional is defined by a certain differential equation instead of an integral. The solutions of the equations for the extrema of the functional determine contact transformations. Some of those results are: two Noether-type theorems for finding conserved quantities and identities, a method for calculating symmetry groups of the functional and several applications.

For the entire collection see [Zbl 1245.00049].

MSC:

70H30 Other variational principles in mechanics
70H33 Symmetries and conservation laws, reverse symmetries, invariant manifolds and their bifurcations, reduction for problems in Hamiltonian and Lagrangian mechanics
49J45 Methods involving semicontinuity and convergence; relaxation
58E30 Variational principles in infinite-dimensional spaces

Full Text: DOI