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## The standard scheme of the analysis of a stability through Lie symmetries and conservation laws: a nonlinear Schrodinger equation.

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Many natural phenomena are described by a system of nonlinear partial differential equations (PDEs) which is often difficult to be solved analytically, as there is no a general theory for completely solving of the nonlinear PDEs.

One of the most useful techniques is the Lie (classical) symmetry method and to obtain the invariant solutions, we focus on the physically interesting situations which admit potential symmetries. Then by using the partial Lagrangian approach, we find conservation laws.

In the study of PDEs, conservation laws are important for investigating integrability and linearization mappings and for establishing existence and uniqueness of solutions. They are also used in the analysis of stability and global behavior of solutions.

The common scheme (worksheet) presented for known example: nonlinear Shodinger equation.

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