AN INTRODUCTION TO LIE GROUP OF TRANSFORMATIONS

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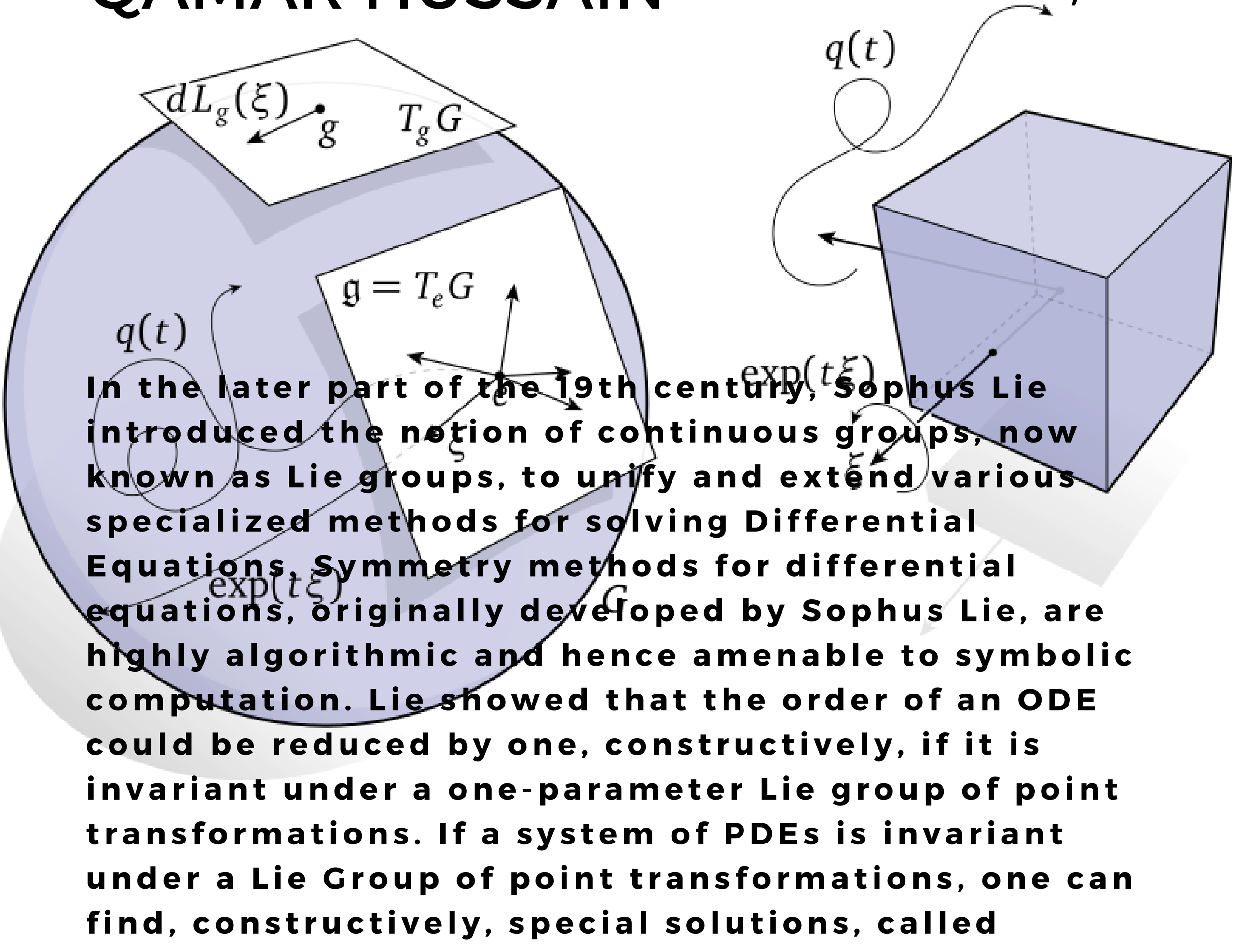

In the later part of the 19th century, Sophus Lie introduced the notion of continuous groups, now known as Lie groups, to unify and extend various specialized methods for solving Differential Equations. Symmetry methods for differential equations, originally developed by Sophus Lie, are highly algorithmic and hence amenable to symbolic computation. Lie showed that the order of an ODE could be reduced by one, constructively, if it is invariant under a one-parameter Lie group of point transformations. If a system of PDEs is invariant under a Lie Group of point transformations, one can find, constructively, special solutions, called similarity solutions or invariant solutions. In this talk I will explain one-parameter Lie group of transformations, infinitesimal transformations & generators, first fundamental theorem of Lie and canonical coordinates with examples.

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