

Lagrangian approach to a coupled Lane-Emden system

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Systems of Lane-Emden equations arise in the modelling of several physical phenomena, such as pattern formation, population evolution and chemical reactions. In this talk we construct Noether and partial Noether operators corresponding to a Lagrangian and a partial Lagrangian for a coupled Lane-Emden system. The first integrals with respect to Noether and partial Noether operators are obtained for the Lane-Emden system under consideration. We show that the first integrals for both the Noether and partial Noether operators are the same. However, the gauge function is different in certain cases.