

# The Noether point symmetries of a Lane-Emden-type equation

**P. Ntsime\***

University of Venda

*Pauline.Ntsime@univen.ac.za*

**C.M. Khalique**

North-West University

*Masood.Khalique@nwu.ac.za*

**SAMS Subject Classification: ODE's and Dynamical Systems**

We classify the Lane-Emden-type equation  $xy'' + ny' + x^v f(y) = 0$  with respect to the standard Lagrangian  $L = \frac{1}{2}x^n y'^2 - x^{n+v-1} \int f(y) dy$  according to the Noether point symmetries it admits. First integrals of the various cases, which admit Noether point symmetries, and reduction to quadratures for these cases are obtained. Six cases result in new solutions.