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**M. T. Mustafa\*** ([tahir.mustafa@qu.edu.qa](mailto:tahir.mustafa@qu.edu.qa)), Mathematics, Statistics and Physics, Qatar University, Doha, 2713, Qatar. *Symmetry classification of heat, wave and Poisson equations on surfaces of revolution.*

A classification of surfaces of revolution according to their isometries was carried out by Eisenhart in 1925. We investigate the corresponding classification question for symmetries of heat and wave equations, and obtain a complete classification of surfaces of revolution according to the symmetries of heat and wave equation. The minimal symmetry algebras are utilized in a unified manner to obtain the solutions, in general integral form, for the heat and wave equations on any surface of revolution. In particular, we compute examples of exact solutions of heat and wave equations on surfaces in different classes of classification including surfaces admitting only minimal symmetry algebra as well as surfaces admitting extra symmetries.

The classification approach is further extended to study group classification problem for Poisson equation. The group classification question for symmetries of Poisson equation on higher dimensional manifolds was answered recently by Bozhkov-Freire. However the question was open for Poisson equation on surfaces. A complete group classification of symmetries of non-linear Poisson equations on surfaces of revolution is carried out. (Received December 18, 2014)