

# Invariant analytical solutions for the motion of an elastic string with electric current in a static magnetic field

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## Abstract

In this work, the Lie symmetry theory is used to study the propagation of waves in an elastic string with electric currents in a static magnetic field. Both linear and nonlin- ear cases of the governing equations of string motion are analyzed. The classification problem of finding the principal admitted Lie groups of symmetries is solved. Some invariant analytical solutions are constructed. The physics of invariant solutions is interpreted when it is possible.

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figures/FIG3-r/FIG3-r-eps-converted-to.pdf

**figures/FIG3-1/FIG3-1-eps-converted-to.pdf**

**figures/FIG2/FIG2-eps-converted-to.pdf**

**figures/FIG4-1-n/FIG4-1-n-eps-converted-to.pdf**

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