Vehicle-Terrain Interaction Models for Analysis and Performance Evaluation of Wheeled Rovers

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• A modeling approach aimed towards performance analysis of mobile robots is introduced.
• The approach is based on force–motion duality, and is not dependent on soil parameters.
• The effect of changes of design parameters in soil reaction forces is captured. Trends of change instead of exact values are provided.
• The proposed model is useful for parametric studies, rover design and control strategies.

Verification of the proposed model with results of experiments on a rover prototype