



## ABSTRACT

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### **Efficient Simulation of Free Vibrations of Ropeways: from Single to Multiple Spans**

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A novel approximate theory for predicting the natural frequencies and vibration modes of single-span ropes carrying mass points is presented [1,2]. An extension to multi-span ropes is also shown, taking into account the movement of ropes over supports. This multi-span model can be used for the free-vibration simulation of ropeways with a large number of supports, where the support friction is of minor importance.

[1] M. Patreider, M. Wenin, C. Adam, T. Furtmüller, In-plane free vibration analysis of an inclined taut cable with a point mass, *Acta Mechanica*, accepted for publication

[2] M. Wenin, Analytical solution of the eigenvalue problem for the elastic cable loaded with a mass point, *Arch. Appl. Mech.* 92, 3649-3660 (2022)