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Eulerian description of non-stationary motion of an idealized belt-pulley system with dry friction

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#### ACCEPTED MANUSCRIPT

### Highlights

- Mathematical model of a belt drive with dry friction at Eulerian description
- Novel non-material finite element implementation with stick and slip effects
- Novel analytical result for the time evolution of the slip zones in a belt drive
- Justified by analytics, non-material FE is ready for practically relevant problems

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