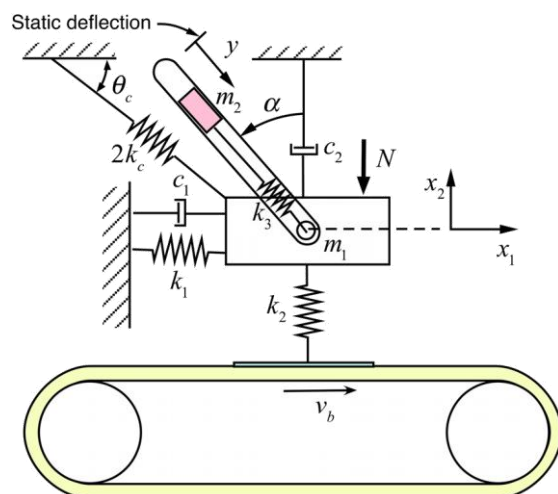


Szakdolgozat / Diplomaterv téma

Témavezető:	Dr. Habib Giuseppe , tudományos munkatárs, habib@mm.bme.hu
Cím:	Suppression of Friction-Induced Vibrations via Tuned Mass Damper
Javasolt képzési szint:	BSc / MSc / TDK
Nyelv:	Magyar, Angol

LEÍRÁS

Bevezetés: Friction-induced vibrations are a major problem in several engineering applications. For example, they cause brake squeal ([video](#)) or hinge squeaking. The objective of this thesis is to implement devices for the elimination of these detrimental vibrations. In particular, the performance of a tuned mass damper will be studied. The candidate should define a mechanical model, study its stability, optimize parameters of the vibration absorption devices and numerically verify analytical results.



Two-degree-of-freedom mass on moving belt model with attached tuned mass damper, from „*On the Passive Control of Friction-Induced Instability Due to Mode Coupling*” Niknam, Farhang, Journal of Dynamic System, Measurement, and Control (2019)

Tasks:

- Study the literature about friction induced vibrations, focusing on few but important papers.
- Define from the literature a two-degree-of-freedom model where friction induced vibrations arise because of modal coupling.
- Define a model for a tuned mass damper.
- Study numerically and analytically the stability of the system.
- Identify parameters of the absorber able to maximize stable region.
- Verify the obtained results through numerical simulations.