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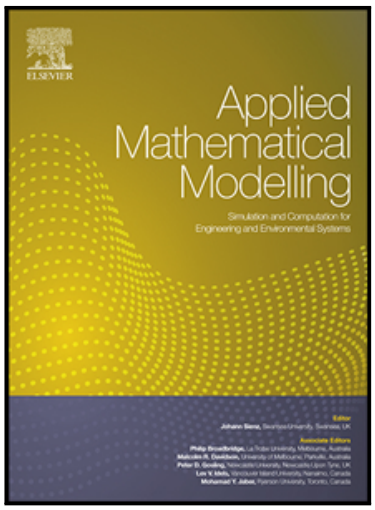

Stiffness and damping models for the oil film in line contact elastohydrodynamic lubrication and applications in the gear drive

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Highlights

- New stiffness and damping models are developed for oil film in normal and tangential directions.
- Smaller lubricant stiffness is beneficial for alleviating gear meshing impact and shear vibration.
- Meshing impact and friction heat is suppressed by either larger normal lubricant damping or smaller tangential lubricant damping.
- Better combined stiffness and damping can be achieved by optimizing gear geometric parameters and operating conditions.

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