Squeal Analysis of a Modal-Parameter-Based Rotating Disc Brake Model

Yongchang Du , Yujian Wang

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Highlights

- Rotation effect is represented by velocity-dependent rotating disc modal parameters.
- Orthogonality of velocity-dependent modal parameters is proved in state-space.
- Rotation leads to complex modes and splits disc doublet modes.
- Rotation speed is proved to be a destabilizing factor under constant friction.
- Both rotation and negative slope friction generate extra non-merging instability.