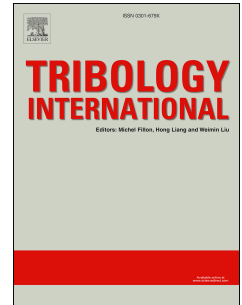


# Accepted Manuscript

Numerical modeling of dynamic frictional rolling contact with an explicit finite element method

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**Physical problem:** dynamic frictional rolling contact

**Assumptions:** not influenced by temperature, etc.

**Mathematical model:** coupled structural dynamics & contact

**Approximations:** spatial and time discretisation

**Numerical model**

Output

Output

Validation

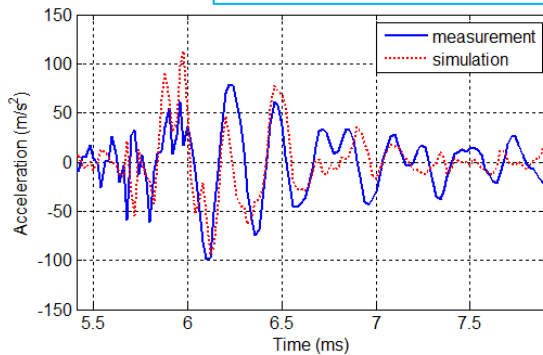
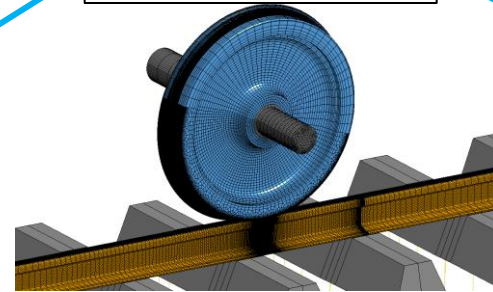
Verification

Nodal motions  
(structural responses)

Nodal forces  
(contact solutions)

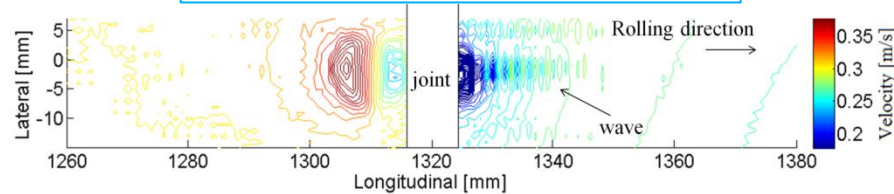
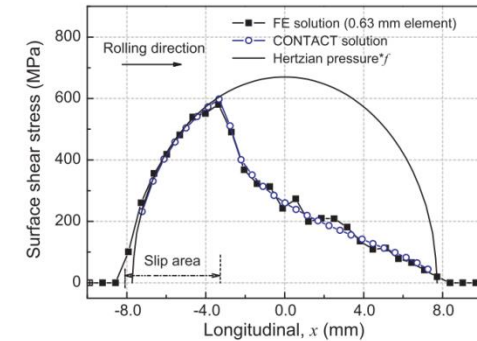
Directly validated  
[Yang *et al.*, 2018]

Directly verified  
[Zhao *et al.*, 2011]



Indirectly validated

Nodal motions + nodal forces  
(dynamic contact solutions)



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