

Contact, friction and wear

Lifetime prediction of contacting components

CONTACT → normal contact loading

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FRICTION → tangential contact loading

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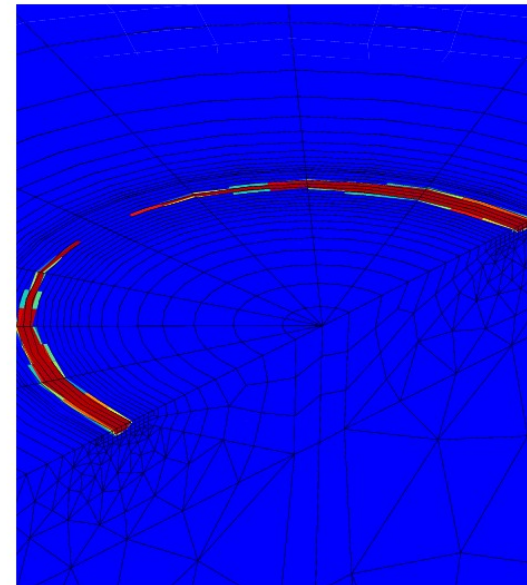
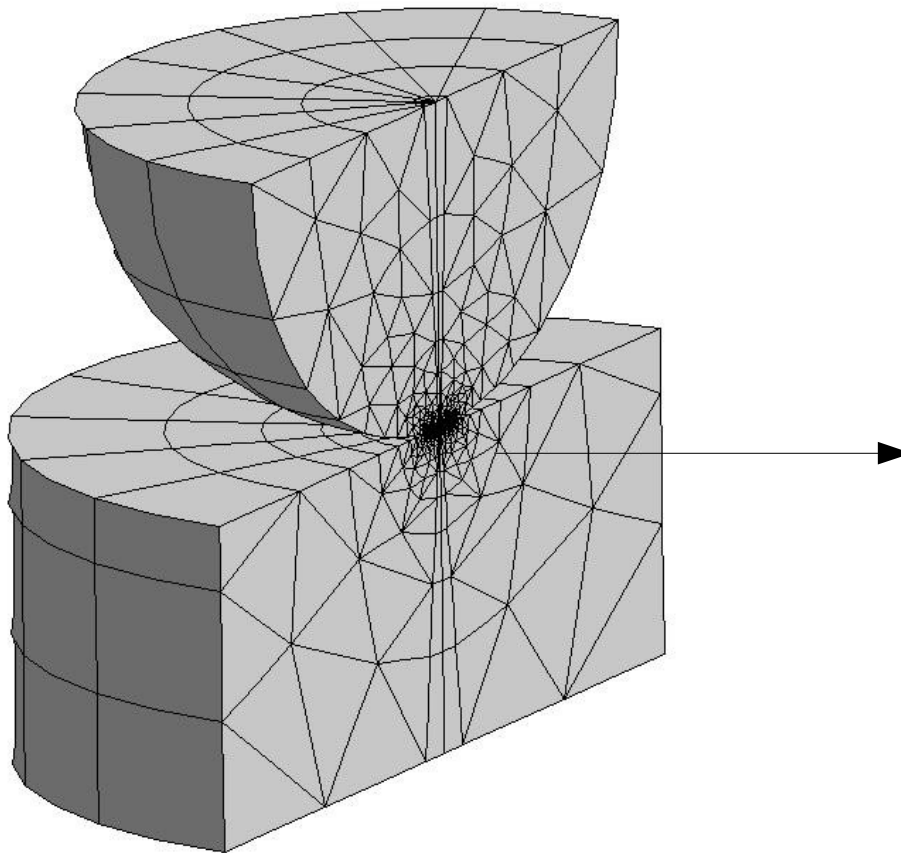
WEAR → geometry change → change of contact loading



LIFETIME ASSESSMENT (Fatigue, Wear, ...)

Contact modeling using Zebulon

- Hard or soft contact
- With or without friction
- Flexibility method
- Impactor / target technique

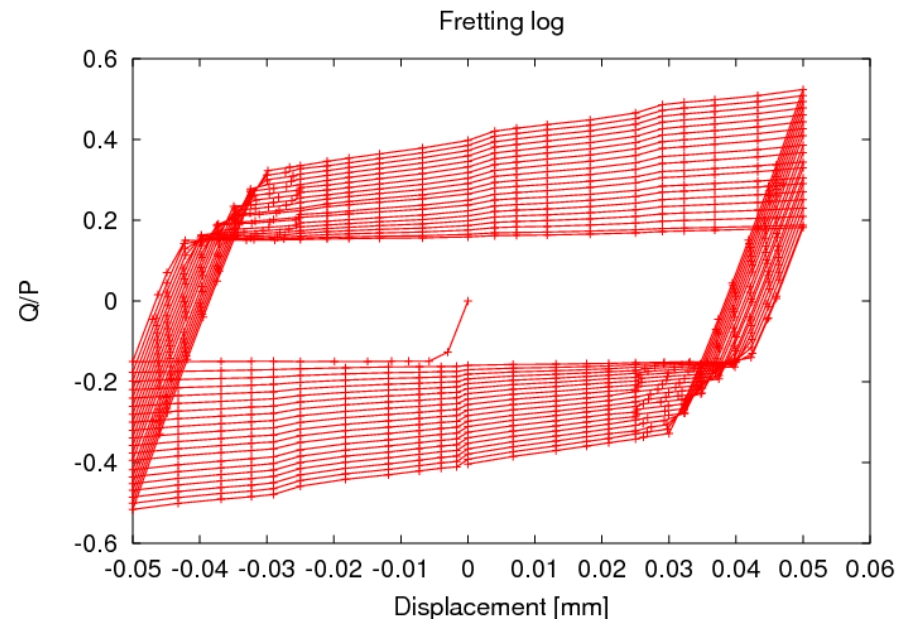
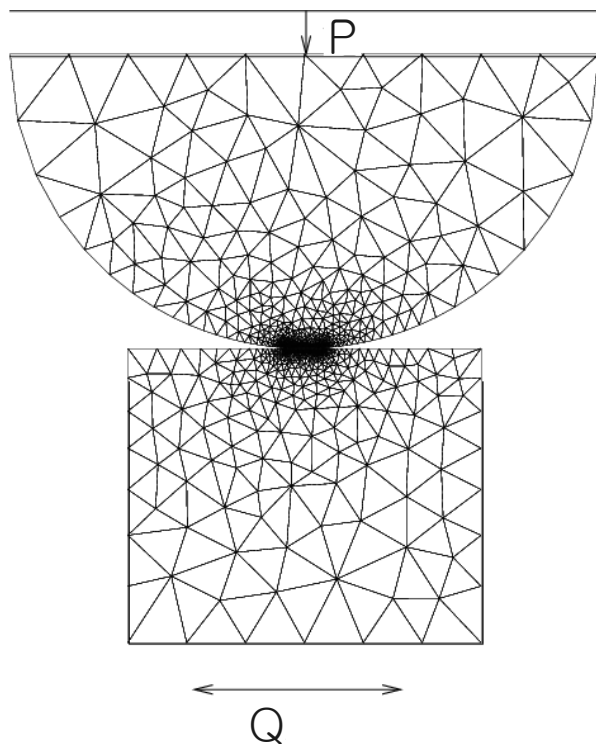


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Friction modeling

- Local model of a changing coefficient of friction $\mu=f(\delta, \delta_{cum})$ at nodes

→ Example of the global friction response (Q/P) in a cylinder/plate fretting model

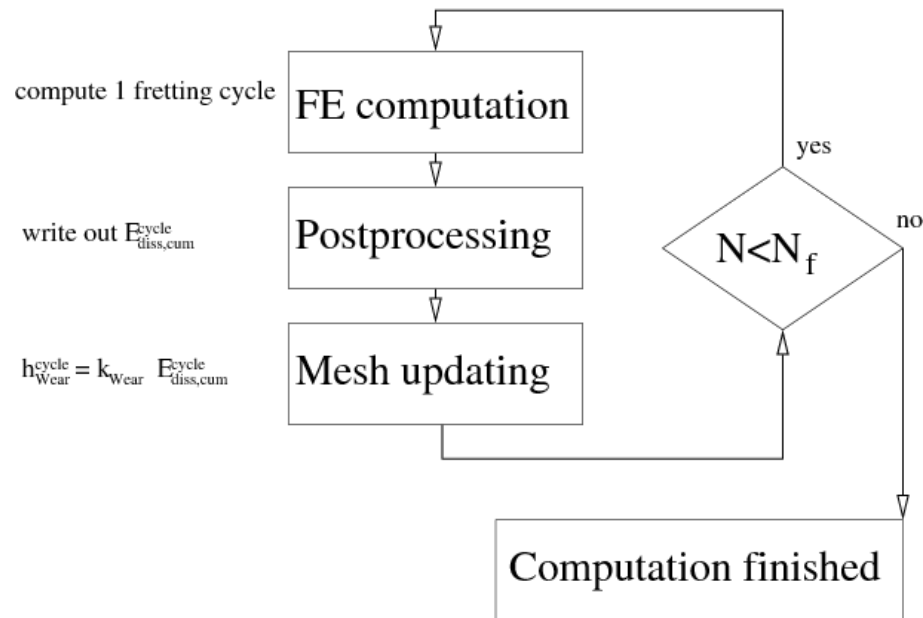


- Efficient framework for the development of custom friction models

Approach to wear modeling

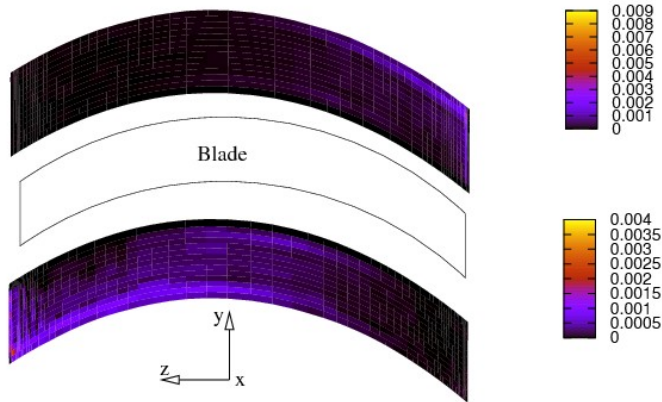
- Change of the local geometry (at nodes)
- Wear energy model (Archard law)

Wear computation strategy:

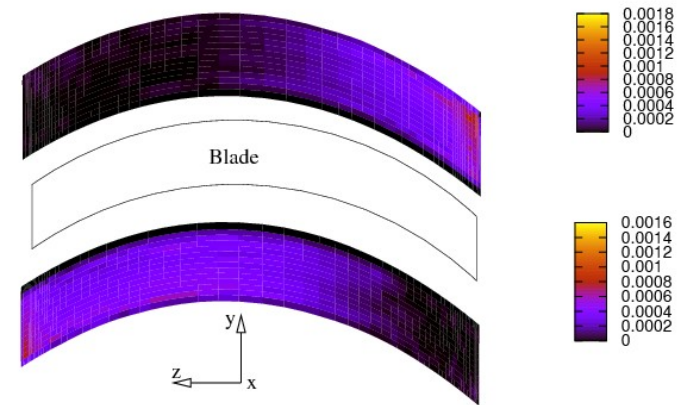


Example: wear in an aeroengine blade – disc fixing

1st computed wear cycle



29th computed wear cycle



Total cumulated wear

