# Lubrication of a truncated EHL spinning contact

Tristan Patrigeon*[1], David Philippon[1], and Nicolas Fillot[1]

[1]Institut National des Sciences Appliquées de Lyon – LaMCoS Laboratory – France

**Abstract**

Film thickness predictions in an elastohydrodynamic lubricated (EHL) contact are mainly based on the hypothesis of a semi-infinite equivalent solid to calculate elastic deformations. However, this assumption is not valid in a number of applications where the contact is close to an edge as in the case in roller-end flange contact in roller bearings. Manufacturing tolerances on the roller and the flange, together with the specific operating conditions may lead to the displacement of the contact zone on the flange. In some cases, the contact may operate very closed to the edge or even on the edge of the flange. In the former case, the classical circular (or elliptical) contact will be truncated. The study focuses on the effect of the contact distance from the free edge, on the film thickness of a lubricated circular contact. In particular, the behaviour of contacts close to or on the edge of the solid will be investigated. A dual numerical-experimental approach is performed. To be closer to realistic conditions, the analysis is performed with chamfered edge. An additional spinning component is implemented in the contact in order to reproduce the kinematics that occur in the roller-end on flange contact. The results show a great decrease in the film thickness as the contact approach the edge, especially on minimum film thickness which reaches critical values.

*Speaker