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**A model to evaluate the importance of tangential contact forces
for tyre/road noise generation**

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The interaction between tyre and road is a complex non-linear process including radial and tangential contact forces between tyre and road surface. During recent years models have been developed which allow for predicting radial forces as function of surface and tyre properties. These models can be used to quantify the influence of radial forces on the noise generation. Whereas in many cases time varying radial forces are the main reason for the generation of tyre noise, in some cases other mechanisms seem to be dominant. This paper aims on understanding the influence of tangential contact on tyre/road noise generation. For this reason the model developed by the Chalmers Tyre Road Noise Group has been extended to also include tangential interaction. The model is based on the same concept as that used by McIntyre and Woodhouse for modelling string/bow contact of musical instruments. It computes the time varying normal and tangential contact forces for a tyre rolling over a rough surface at constant speed. A small selection of simulation results are presented aiming at showing the effect of different parameters, such as friction coefficient and normal load, on the occurrence of instability phenomena such as stick/slip vibrations.