

## COMPARISON BETWEEN NUMERICAL AND EXPERIMENTAL RESULTS OF THE SKEW ANGLE IN TAPERED ROLLING BEARINGS

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### KEYWORDS

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### ABSTRACT

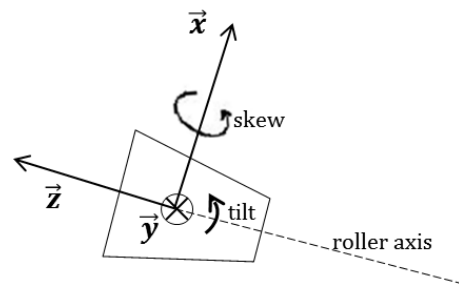
The evaluation of the roller skew has a prime significance for bearing designers and manufacturers. Skewing is presented as the motion of a roller as it rotates about an axis normal to the roller-axis (Fig.1).

This work reports the roller skew of a tapered roller bearing. A numerical analysis for kinematic equilibrium at each rolling element in tapered roller bearings [1] permits to calculate the roller skew angle in tapered rolling bearings. In order to validate the numerical skew values, an experimental setup is built. It allows measuring the roller skew in tapered roller bearings thanks to two Contact Potential Difference (CPD) probes.

The main objective of this work is to compare the numerical skew angles to the experimental values for a tapered roller bearing. Moreover, the effect of the load, shaft speed, temperature, and viscosity of the lubricant are examined.

The primary numerical results are qualitatively in a good agreement with the literature [2, 3]. Results show that the roller skew angle strongly depends on the friction at the rib-roller end contact.

Fig.1 Skewing about the x-axis and tilting about the y-axis of a tapered roller



### REFERENCES

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- [3] Nelias, D., Bercea and I., Paleu, V., Tribology Transactions, 51, 2, 128-139.