Minicolloque n° MM12 Frottement solide ■ **Oral** □ **Poster**

Contribution to interaction between finger and textile fabrics during tactile task

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In this study, the influence of finger sliding direction, i.e., radial–ulnar and ulnar–radial in the case of lateral finger orientation, or proximal–distal and distal–proximal, for anteroposterior orientation, and movement orientation, lateral or anteroposterior, on the finger friction and vibrational behaviours has been studied. The surface particularly considered are quite common textile surfaces with periodical textures.

The effect of sliding direction on the coefficient of friction and the induced vibrations is studied. There is no influence of sliding direction on the coefficient of friction for textile fabrics whatever the movement orientation, lateral or anteroposterior. In terms of finger induced vibrations, the influence of sliding direction is very slight.

In the last decade, the role of the direction of fingerprints relative to the sliding orientation has been largely studied [1-4]. In particularly, induced finger vibration due to texture is significant when fingerprints are parallel to the texture and perpendicular to the sliding movement. However, in the present study with textile fabrics, the orientation of the fingerprints relative to the surface texture has not a significant role. In fact, the finger vibrations are higher in the lateral than in the anteroposterior movement below 75 Hz, and lower for higher frequencies whatever the presence or not of fingerprints. This difference of finger vibration behaviour with the finger orientation can be assumed to be due to finger biomechanics due to joints, tendons and muscles and/or to fingertip anisotropic mechanical behaviour. Moreover, it is possible the low adhesion of textile surfaces due to their roughness and their compressibility in the thickness direction influence this behaviour.

These results can explain the necessary of a multidirectional finger movement when touching a surface and particularly a textile fabric with current hairiness.

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