Mechanics of tennis racket strings

Thibault Papin*[1]

[1]PMMH/LadHyX – Institut Polytechnique de Paris – France

Résumé

Fibrous network are known for their ability to reinforce or enhance the mechanical properties of materials (natural, industrial or even biological). Frictional fibers, like strings in racket sports, can achieve such reinforcement. Upon deformation, the geometrical conformation of fibers assembly rearranges leading to a complex mechanical response. Here, we are interested in the mechanical of a 2D fibrous network under tension that represent a tennis head. Friction between fibers greatly affects the elastic and plastic behavior of each fiber. They don't move independently anymore but as a group that can be characterized. Applied to tennis racket head, we are looking into the influence of the tennis parameters (string tension, material, pattern...) on fiber friction and fiber behavior.

*Intervenant