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Experimental and Analytical Investigation of Rubber Friction

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The physical phenomenon of friction appears in many technical applications. One of the most interesting fields is friction of rubber that depends on different parameters e.g. velocity, roughness, normal pressure and temperature. The hysteresis friction of rubber is caused by the energy dissipation due to internal material damping during the process of deformation. The adhesion increases with the true contact area which depends on the roughness, on the viscoelasticity and on the sliding velocity. In this presentation, some effects of rubber friction will be analyzed. A mechanical model of hysteresis and adhesion friction will explain the physical background. The dependence of the friction coefficient on the relative velocity will be shown by measurements and compared to predictions. The dependence on the normal force will be explained and demonstrated by measurements on different surfaces.

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