Wear Simulation Modeling by Using the Finite Element Method

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We can define wear as a phenomenon, which humanity can't fully explain and many do not understand it well. It is known for several millennia. It's an action, which can't be avoided. Often it's a critical factor affecting lifetime of device parts, for example the wear of plain bearings in many rotational devices can affect the function and cause great damage to it. The presented paper deals with stress and contact pressure distribution simulated by the finite element method (FEM) and the development of a wear module for simulating sliding wear of materials. First the theory of wear is presented. The next section presents the development of an own wear module in MATLAB, which also deals as an interface between MATLAB and ABAQUS software. Finally the module is tested on a sliding wear testing problem which is simulated using ABAQUS and the simulation results are presented at the end.

Keywords: Finite element method, wear, sliding contact

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