Stress State of a Drilling Tool Under Static Loading

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Abstract

This paper investigates the stress state of a drilling tool under static loading. Drilling tools refer to the equipment used for drilling into rock, soil, and other materials to extract natural resources such as oil, gas, minerals, and groundwater. These tools are designed to break rock formations and remove cuttings efficiently during drilling operations. The analysis is performed using the photoelasticity method. The influence of the geometric parameters of the bits, the sharpening angle and the radius of curvature of the cutting edge on the stress distribution is considered. The obtained results can be useful for the design and optimization of drilling tools.