ANALYSIS OF THE STABILITY OF STATIONARY BOUNDARY FRICTION MODES IN THE FRAMEWORK OF A SYNERGETIC MODEL

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S u m m a r y

A synergetic model describing the state of an ultrathin lubricant layer squeezed between two atomically smooth solid surfaces operating in the boundary friction mode has been developed further. To explain the presence of different operation modes of the system for various sets of its main parameters, the mathematical analysis of the synergetic model is carried out. The type of functioning a tribological system is described in accordance with the stability character of singular points, and the diagrams distinguishing various operation modes are obtained. Phase portraits corresponding to different stability types are plotted for all diagram areas. A stick-slip mode of motion that is often observed experimentally is described.