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Elastodynamic Contact Problem for Two Penny-Shaped Cracks

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The three-dimensional fracture dynamic problem for two penny-shaped cracks located in the plane under a normally incident harmonic tension-compression wave is considered. The problem is solved by the method of boundary integral equations with allowance for the cracks' edges contact interaction (Signorini constraints). The contact forces and the displacement discontinuity of the cracks' edges are examined. The dependence of the mode I stress intensity factor on the reduced wave number and mutual arrangement of cracks is studied. The computational solution is compared with the results obtained without allowance for the cracks' edges contact interaction.

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