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BENCHMARK EQUATIONS FOR DETERMINATION OF MAIN PARAMETERS OF FRACTURE MECHANICS

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Abstract:
Based on the results of previous investigations on analysis of cracked members, the stiffness of a cracked member is defined as the product of stiffness of the intact member and the fracture ratio. The generic fracture ratio corresponding to unit stiffness of the intact member is defined in terms of the crack depth ratio. The generic fracture ratio and the relations between the compliances of a member under bending moment, axial force and torsion are used to define benchmark equations for determination of main parameters of fracture mechanics such as crack compliance, energy release rate, and stress intensity factor. Using the comparison of obtained results with those of the others, the accuracy and efficiency of the proposed equations have been verified.