SM9S_10646

XXI International Congress of Theoretical and Applied Mechanics
Warsaw, Poland, August 15–21, 2004

Dynamic Crack Analysis Under Thermal Shock

Parissa Hosseini-Tehrani, Alireza Hosseini-Godarzi

Automotive Department, Iran Univercity of Science and Technology, Tehran, Iran

A boundary element method using Laplace transform in time domain is developed for the analysis of fracture mechanic considering transient coupled thermoelasticity problems with relaxation times in two dimensional finite domain. The dynamic thermoelastic model of Lord and Shulman are selected for showing finite thermal propagation speed. Thermal dynamic stress intensity factor for mode I is evaluated. The accuracy of the method is investigated through comparison of the results with the available data in literature. Condition where the inertia term plays important role is discussed and variations of dynamic stress intensity factor is investigated. Different relaxation times are chosen for briefly showing the effects on stress intensity factor considering Lord and Shulman (LS) theory. REFRENCES Hosseini-Tehrani, P., Eslami, M.R., (2001) “Dynamic Crack Analysis Under Coupled Thermoelastic Assumption”, Trans. ASME J. of Applied mech., 68, 585–588.

View the extended summary