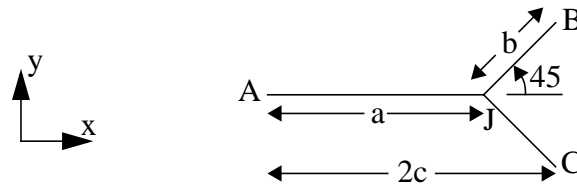


Problem: A branch crack in an infinite plane subjected to uniform uniaxial tension σ_{yy}



Numerical Model: The crack was modelled using displacement discontinuity. Twenty-two linear lagrange elements were used on the main branch starting at A and twelve linear lagrange elements were used on each of the other two branches.

Results: Stress intensity factors were calculated by the J-integral, least square, and crack opening displacement methods and compared with values reported in : Murakami, Y. (1987). *Stress Intensity Factors Handbook*. Pergamon Press, Oxford.

Table 1: Non-dimensional Stress Intensity Factors for Branch Cracks

b/a		Crack Opening	J-integral	Least Squares	Reference ^a
0.05	K_I^B	0.582	0.593	0.596	0.593
	K_{II}^B	0.290	0.297	0.305	0.297
	K_I^A	0.985	1.004	1.012	1.006
0.6	K_I^B	0.486	0.496	0.500	0.497
	K_{II}^B	0.474	0.484	0.490	0.485
	K_I^A	1.008	1.027	1.034	1.029

a.Murakami [1987], 375