

A hybrid weight-function technique is presented. It consists of dividing an elliptical crack into two zones, then using the appropriate weight function in the area where it is more efficient. The proportion between zones is determined by optimizing two crack parameters (axis ratio and curvature radius). Stress intensity factors for plates containing elliptical and semi-elliptical cracks are hence computed by a self developed computer code. Static and fatigue loadings of bending are considered. The results found by the present approach are in good correlation with the analytical solutions (when available) as well as with those of other researchers