

# Illustrative Example of a Toughness-Constraint Locus

**K or J**

- ⊗ Representative initiation toughness measurements with varying levels of constraint.
- ⚙ Example: E399 or E1820 K<sub>IC</sub> or J<sub>IC</sub> test
- ⊕ Examples: Surface crack tests or SEN(B) with  $0.1 < a/W < 0.5$
- ▲ Example: M(T) test

K or J dominance not achieved due to lack of constraint, 2 parameters required to describe fields

K or J dominance, only 1 parameter required

----- Loading trajectories

$\Omega$  = Constraint measure  
 $\Omega_0$  = Constraint condition equivalent to  $T = 0$

$\Omega$