Fatigue assessment of notched specimens by means of a critical plane-based criterion and energy concepts

Andrea Carpinteri, Filippo Berto, Alberto Campagnolo, Giovanni Fortese, Camilla Ronchei, Daniela Scorza, Sabrina Vantadori

PII: S0167-8442(15)30247-0
DOI: http://dx.doi.org/10.1016/j.tafmec.2016.03.003
Reference: TAFMEC 1690

To appear in: *Theoretical and Applied Fracture Mechanics*

Received Date: 27 December 2015
Revised Date: 3 March 2016
Accepted Date: 7 March 2016

Please cite this article as: A. Carpinteri, F. Berto, A. Campagnolo, G. Fortese, C. Ronchei, D. Scorza, S. Vantadori, Fatigue assessment of notched specimens by means of a critical plane-based criterion and energy concepts, *Theoretical and Applied Fracture Mechanics* (2016), doi: http://dx.doi.org/10.1016/j.tafmec.2016.03.003

to Special Issue "**Notch Mechanics**"
Theoretical and Applied Fracture Mechanics – December 2015
Revised version - March 2016

FATIGUE ASSESSMENT OF NOTCHED SPECIMENS BY MEANS OF A CRITICAL PLANE-BASED CRITERION AND ENERGY CONCEPTS

Andrea Carpinteri[1], Filippo Berto[2,3], Alberto Campagnolo[2], Giovanni Fortese[1], Camilla Ronchei[1], Daniela Scorza[1], Sabrina Vantadori[1]

[1]Dept. of Civil-Environmental Engineering and Architecture, University of Parma, Parco Area delle Scienze 181/A 43124 Parma – Italy
[2]Dept. of Management and Engineering, University of Padua, Stradella San Nicola 3, 36100, Vicenza - Italy
[3]NTNU, Department of Engineering Design and Materials, Richard Birkelands vei 2b, 7491, Trondheim - Norway

Corresponding author:
Andrea Carpinteri, e-mail: andrea.carpinteri@unipr.it

Abstract

A strain-based multiaxial fatigue criterion previously proposed for fatigue assessment of unnotched specimens is here extended to the case of notched ones. Such a criterion is a reformulation of the stress-based multiaxial High-Cycle Fatigue (HCF) criterion by Carpinteri and Spagnoli. The extension herein presented considers as the critical point, where to perform the fatigue assessment, the material point located at a certain distance from the notch tip,