



Science Arts & Métiers (SAM)

is an open access repository that collects the work of Arts et Métiers Institute of Technology researchers and makes it freely available over the web where possible.

This is an author-deposited version published in: <https://sam.ensam.eu>
Handle ID: [.http://hdl.handle.net/10985/19148](http://hdl.handle.net/10985/19148)

To cite this version :

Véronique DOQUET, Gilbert HENAFF, Thierry PALIN-LUC, Marion RISBET - Fatigue Crack Initiation and Propagation - 2019

Any correspondence concerning this service should be sent to the repository

Administrator : scienceouverte@ensam.eu





Chapter 4 – Fatigue Crack Initiation and Propagation

Véronique DOQUET, Laboratoire de Mécanique des Solides LMS

Gilbert HÉNAFF, ISAE-ENSMA

Thierry PALIN-LUC, Arts et Metiers Institute of Technology – I2M

Marion RISBET, Université de Technologie de Compiègne, UTC

<https://doi.org/10.1016/B978-1-78548-309-7.50004-1>

Abstract

The resistance of metal alloys to fatigue can be classified into four major regimes: low-cycle fatigue (or short life), limited resistance (between 10^5 and 10^6 cycles), high-cycle fatigue (between 10^6 and 10^7 cycles) and gigacycle (more than 10^7 cycles). This chapter introduces the basic concepts of cyclic mechanical behavior, crack initiation and propagation in these different regimes.

Keywords

Crack path ; Fatigue Crack Initiation ; Fatigue crack propagation ; Gigacycle fatigue ; High-cycle fatigue tests ; Interaction between modes ; Mixed-mode fatigue crack growth ; Multiaxial fatigue ; Plastic or low-cycle fatigue tests

In : Mechanics - Microstructure - Corrosion Coupling, Christian Blanc, Isabelle Aubert, ISTE Press - Elsevier, 2019, ISBN 9781785483097 - <https://doi.org/10.1016/C2018-0-05006-9>