

Università degli Studi di Pavia

Dipartimento di Meccanica Strutturale

In collaborazione con

Centro di Simulazione Numerica Avanzata – CeSNA

Istituto Universitario di Studi Superiori

Damage Mechanics Based Models for High-Cycle Fatigue Life Prediction of Metals

Metal fatigue may be considered as a form of material degradation/damage caused by cyclic loading. This material behavior can be fully characterized with an emerging theory of damage mechanics first introduced by Kachanov in 1958. This theory, based on irreversible thermodynamics, has been widely applied to study fatigue failure of metals. In high-cycle fatigue in particular, macroscopic plasticity is for the most part negligible, and crack initiation occurs in localized plasticity spots surrounded by a material in elastic range, i.e., damage is localized on a microscopic scale with negligible influence on the macroscopic scale. Several works have been proposed in the literature attempting to extend the framework of continuum damage mechanics to the fatigue field including its multi-scale aspect. It is the main purpose of this presentation to consider the most relevant ones for the prediction of HCF of metals.

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*Venerdì 18 Dicembre, Aula MS1
Seminar tentative schedule: 15.30 - 17.00
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