Prof. Blaise Bourdin

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impartirá la Conferencia Inaugural del Programa de Doctorado
en Ingeniería Mecánica y de Organización Industrial – 2020/21

en forma de un curso de 6 horas sobre

Variational and phase-field models of fracture

Lecture 1: The construction of variational models of fracture from Griffith criterion

Lecture 2: Their phase-field approximation

Lecture 3: Implementation, extension, and nucleation

In the last 25 years or so a new view fracture in brittle materials has emerged. It is based on a reinterpretation of Griffith's classical criterion as a variational principle for a free-discontinuity energy. This new analysis approach gave rise to a new class of numerical models, commonly referred to as phase-field models. The goal of this course is to give a rigorous construction of both theory and detail its application to a range of problems. I will start by introducing Francfort and Marigo's variational approach to fracture, insisting on how it addresses two common shortcomings of the classical LEFM theory: path identification and kinking. I will then construct a family of phase-field approximations, and describe their implementation. I will then describe an alternate construction of these models and show how it can be used to attack the issues of nucleation and size effects. Finally, I will describe open problems in the field.

Lugar: Sesión en Zoom https://lsu.zoom.us/j/4265349837?pwd=ZzNEV3BTT2hkMWExaEtmODRYMkRYdz09

Fecha y hora: 25, 26 y 27 de enero de 2021 de 16:00 a 18:00 (CET).
Organiza: Programa de Doctorado en Ingeniería Mecánica y de Organización Industrial, Universidad de Sevilla.
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Financia: 3er Plan Propio de Docencia