

3D simulations of the interactions between crack and dislocations

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Amphithéâtre de la Maison du Doctorant

Jury:

Monsieur Christian ROBERTSON, Ingénieur CEA Saclay, Rapporteur

Monsieur Stéphane BERBENNI, Directeur de Recherche CNRS, LEM3, Rapporteur

Monsieur Thomas PARDOEN, Professeur à l'Université Catholique de Louvain, Examineur

Monsieur Vincent CHIARUTTINI, Ingénieur Onera Chantillon, Examineur

Monsieur Rémy DENDIEVEL, Professeur des Universités, Univ. Grenoble Alpes, SIMaP, Examineur

Monsieur Erik BITZEK, Docteur Ingénieur, Max-Planck-Institut für Eisenforschung, Düsseldorf, Invité

Abstract: The thesis is incorporated within the framework of the Work package 2 of the microKlc Project entitled: Development and Application of a Discrete Dislocation \square Crack Dynamics (DDD+C) Model. This Work Package will be done in close interaction with the WP1: Atomistic Simulations of Static and Dynamic Cracks and WP3: Micromechanical Fracture Testing carried out in Germany within the FAU. The objective is to implement a crack propagation model in the DDD code developed in SIMaP for body-centered cubic materials in the thermal activated state. After validation in a static loading scenario, the code will be expanded to take into account crack propagation. A lead is to use a cohesive zone model based on energy-displacement curves which will be provided by atomic simulations attained in FAU Nurnberg.