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énergie atomique • énergies alternatives

# SEMINAIRE



**Service de Recherches de Métallurgie Physique**

DEN/DANS/DMN

Salle de réunion du SRMP – Bâtiment 520 – Pièce 109

## ***Unstable Dislocations in Anisotropic Crystals***

***Steve Fitzgerald***

***Research Scientist  
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Dislocations are line-like objects with an associated elastic energy proportional to their length. Therefore, it would seem sensible to consider a positive line tension encoding their resistance to elongation. If we confine the dislocation to a plane, this tension is given by  $E + E''$ , where  $E$  is the energy per unit length and the derivatives are taken with respect to the angle in the plane. When the crystal is isotropic, this quantity is always positive, and dislocations will assume a smooth elliptical shape at equilibrium. In highly anisotropic crystals, however,  $E + E''$  can become negative for certain orientations. This counterintuitive notion (a dislocation can reduce its energy by increasing its length) leads to unusual cusped dislocation configurations, which have been observed in the electron microscope. It may also provide a possible explanation for the observed plastic weakness of iron and ferritic steels in the highly anisotropic (high temperature) regime.

**Jeudi 12 janvier 2012 à 10h30**

***N.B :*** *Les visiteurs de nationalité étrangère hors Union Européenne sont priés de bien vouloir avertir impérativement 3 semaines à l'avance – les visiteurs de l'Union Européenne 1 ou 2 jours avant le séminaire le*  
*Secrétariat du Service de leur entrée sur le Centre : Tel : 01 69 08 66 64 – Fax : 01 69 08 68 67*

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