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Shear bands, material instabilities, and the folding of an elastic continuum

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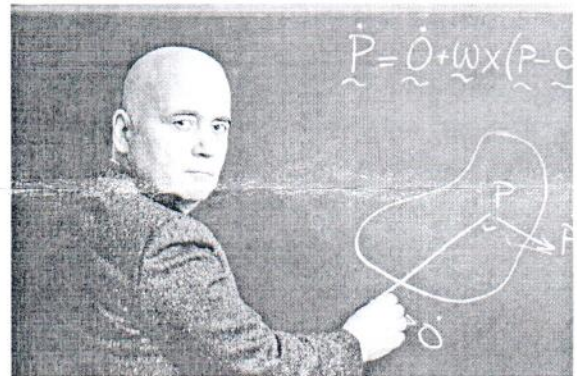
Abstract:

Shear bands are a common example of material instability. They occur at a broad range of spatial scales: from kilometeric scale to the nanoscale. In addition to their universality, shear bands have the typical feature of remaining straight during mode II propagation (whereas cracks do not).

Using the perturbative approach, it is possible to explain the tendency of ductile materials towards failure into shear bands and the typical straight propagation. Moreover, it is possible to analyse dynamical effects and the interactions between a shear band and a rigid thin inclusion. The perturbative approach is employed to show how an elastic continuum, near a material instability condition, can suffer a folding or a chessboard discontinuity instability.

Bio:

Currently Prof. Davide Bigoni holds a full professor position at the University of Trento, where he is leading the best group of Solid and Structural Mechanics in Italy, one of the strongest in Europe. He is a mechanician working in material modeling, wave propagation in solids, fracture mechanics and structural mechanics. Until now he has authored or co-authored more than 90 journal papers and has published a book. He is co-editor, associate Editor, member of the editorial boards of more than 8 International Journals. He is reviewer for more than 90 international journals. He was elected in 2009 Euromech Fellow, has received in 2012



the Ceramic Technology Transfer Day Award, and in 2014 he has received the Doctor Honoris Causa degree at the Ovidius University of Constanta. More details can be found at <http://www.ing.unitn.it/~bigoni/>

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地 点：清华大学航天航空学院 蒙民伟科技大楼 N412