APPLICATION OF GRADIENT DAMAGE MODELS TO THE STUDY OF SUBSIDENCE IN UNDERGROUND MINING

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This talk will present recent research on the ability of the gradient damage models (see e.g. the review by Marigo, Maurini & Pham - Meccanica 2016) to capture block caving subsidence in underground mining. The work comprises finite element simulations exhibiting the growth of the cave until contact is made with the overlying ground, the identification of parameters in uniaxial compression tests on short bars based on the characterization of homogeneous solutions of the associated Euler-Lagrange equations, and a rigorous derivation of a dimension-reduced bar model including an internal damage variable (used to guide the inverse 3D identification problem).