

IDENTIFICATION ISSUES FOR DYNAMIC TESTS INVOLVING DAMAGE AND LOCALIZATION

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This presentation focusses on the identification of a delay damage meso-model [1, 2] in the case of dynamic experiments involving localization and fracture. The application concerns the design of composite crash absorbers developed by *EADS Suresnes*.

The questions which are discussed here are the following:

- Is the identification of the material parameters characterizing the damage evolution law in the localization zone feasible?
- How to deal with the very uncertain values of the boundary conditions in crash tests with fracture?

For the first point, a theoretical study of the delay model is made, in order to compare the dissipated energy inside and outside the localization zone. This leads to some reasonable values of the parameters that can be identified.

For the second question, an identification method has been developed, extending some previous works on model updating in vibration [3]. Our guiding principle is to split the quantities into two groups, the reliable quantities (verified exactly) and the non-reliable ones (verified at best). A first example is treated in the framework of elasticity, where the uncertain quantities are the elastic parameters and the boundary conditions. In a 1D numerical example, the method appeared to be very robust with respect to the measurement perturbations [4]. Work is currently underway to extend this method to the delay model, including the possibility of damage localization. The first results should be presented at *USNCCM7*.

References

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