

Hyper-reduction of models Towards a large-scale distribution of the method

Postdoctoral position, duration 12 month at EDF Clamart (France, close to Paris)

Start Date: Immediately

Qualifications : PhD in computational mechanics, computer sciences, applied mathematics.

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The choice of a state representation of the mechanical structures is still a current concern in computational mechanics. The model reduction methods allow to rewrite the system of equations related to complex problems in order to reduce the costs of numerical simulations. One must agree to run models potentially less accurate. This type of method extracts models facilitating the parametric studies from models having a detailed description related to geometry or to material behavior.

These last years, a method of hyper-reduction, the APHR method, was proposed to reduce the complexity of the non-linear problems. We wish to develop the means allowing a wide distribution of this method. The developments will be made within the framework of the work package #3, entitled " Hyperreduction of model ", of the project Advanced Numerical Methods in Mechanics (MNAM). They will be realized for the main part within the AMA department of EDF R&D located in Clamart (92100). The postdoctorant, under contract with Armines, will make its mission in narrow relation with the team of engineers and researchers developing the Code_Aster software.

The main objective of the proposed mission is to implement the various procedures necessary for the integration of the method of Hyper-reduction in Code_Aster.

Deliveries :

- A repport describing the algorithm related to the APHR method
- A repport related to the study of impact
- Fortran source code related to the APHR method
- A final repport