FE Analysis of Head Impact with the use of ABAQUS/Explicit

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ABSTRACT:

Passive safety simulation is a well-established tool in automobiles development, indeed, our enterprise (IDIADA) takes part on the development of virtual testing for several automobile manufacturers.

The EECV WG 17 Report, 'Improved Test Methods to Evaluate Pedestrian Protection Afforded by Passenger Cars', addresses head impact testing and associated head injury criterion, which lead to some future legislative demands. To assure this demands virtual testing is taken along.

The aim of this project is to cover out the virtual testing with the use of ABAQUS/Explicit code.

As a previous step geometry and mesh of the headform had to be generated. The project really started with a reduced simulation of a certification test in order to obtain a FE headform model which correctly matched the certification test results.

The final step was to design and carry out realistic tests in order to validate the previously obtained FE model.

The whole project (tests and simulations) was carried out at IDIADA's facilities.