

# IGA Implementation for Solids in Radioss

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## ABSTRACT

Isogeometric analysis has shown to be a very promising tool for an integrated design and analysis process [1,2]. A challenging task is still to move IGA from a proof of concept to a convenient design tool for industry and this work contributes to this endeavor. This communication deals with the implementation of IGA concept into Radioss [3] explicit code in order to address crash and stamping simulation applications.

To this end, the necessary ingredients to a smooth integration of IGA in a traditional finite element code have been identified and adapted to the existing code architecture. First, a solid NURBS element has been developed in Radioss and then, an existing contact interface has been extended in order to work seamlessly with both NURBS and Lagrange finite elements. Some academic and simple industrial cases will be presented to show the obtained results and the relevance of the retained solution. Mesh refinement is the third ingredient added to this integration. As local refinement is needed for solution approximation and for patch connection, we implemented the approach of locally refined B-Splines (LRBS) [4,5]. An analysis is made in terms of additional data requirements and implementation aspects. Obtained results with this technique will be displayed and discussed, as well as the conditions to the resulting refined LR mesh's conformity.

## REFERENCES

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