Dear Prof. Dr.-Ing. P. Wriggers,

Please find below our reply to the comments of the reviewers to the paper entitled "Nitsche’s method for two and three dimensional NURBS patch coupling" by Vinh Phu Nguyen, Pierre Kerfriden, Marco Brino, Stephane P.A. Bordas and Elvio Bonisoli· The manuscript reference number is CM-13-0289.

Our comments are in the text (in bold). We have made changes to the manuscript taking into account all the comments of all reviewers. Changes are highlighted in red color in the revised paper.

The authors wish to thank the anonymous reviewers for their useful comments on this paper.

Reviewer1:
This is a solid paper, and it may be published in Computational Mechanics.

In the Conclusions part, the authors should carefully address the issues such as

(1) Can Nitsche's method+NURBS be extended in finite deformation calculations ?
for instance for hyperelastic materials ? My question is: Is it feasible ?

(2) Can it be extended to dynamics ?

because some of them could be done, and some of them may or may not be even feasible. So be careful.

Nitsche’s method or generally Discontinuous Galerkin methods have been applied to finite deformation problems (for hyperelastic materials) in the works of Noels,Radovitzky and Sanders. It was also used in linear dynamics by means of modal superposition and in a dynamics fracture analysis in the context of standard FEM.

The following reference are added:
Tornincasa S., Bonisoli E., Kerfriden P., Brino M., “Investigation of crossing and veering phenomena in an isogeometri analysis framework”, IMAC XXXII, Orlando, FL, USA, 2013, February 3-6.

(in example 5.5)

L. Noels and R. Radovitzky. A general discontinuous Galerkin method for finite hyperelasticity. Formulation and numerical applications. International Journal for Numerical Methods in Engineering, 68(1):64–97, 2006.

R. Radovitzky, A. Seagraves, M. Tupek, and L. Noels. A scalable 3d fracture and

fragmentation algorithm based on a hybrid, discontinuous Galerkin, cohesive element method. Computer Methods in Applied Mechanics and Engineering, 200(14):326 – 344, 2011.

(in the conclusion)

Reviewer: 2
Comments to the Author
expand more on 4.1.2 Non-matching structured meshes.
expand more on 4.3 extension to NURBS elements

We have added some texts to make these two parts clearer.

Examples are enough

*explain more on the choosing the stabilization parameter. (1*10^6 for plate with a center inclusion,1*10^8 for connecting rod etc.)*

We explained in the revised text (the end of page 16) that the stabilization parameter was chosen empirically (according to the order of the stiffness matrices values involved in the element formulation, thus including element dimensions and material parameters) and we verified that the stiffness matrix is positive definite. We also mentioned the method of solving an eigenvalue problem to determine this parameter.

adding the following references will be helpful to readers.

Reproducing Kernel Particle Methods
W. K. Liu, Jun, S., and Zhang, Y. F.
International Journal for Numerical Methods in Fluids, vol. 20, pp. 1081-1106, 1995.

Chen, J. S., Wu, C. T., Yoon, S., and You, Y., "A Stabilized Conforming Nodal Integration for Galerkin Meshfree Methods," International Journal for Numerical Methods in Engineering, Vol. 50, pp. 435-466, 2001.

These two papers are cited in the revised text.

We also provided some minor modification to the text to make it clearer: in the paragraph above figure 3, we explained the difference between Bsplines and Lagrange basis functions. And in the References, we updated our articles.

With my best regards,

Stephane Bordas