
Master project, 2017-2018

— Application of isogeometric analysis (IGA) in an electrical machine —

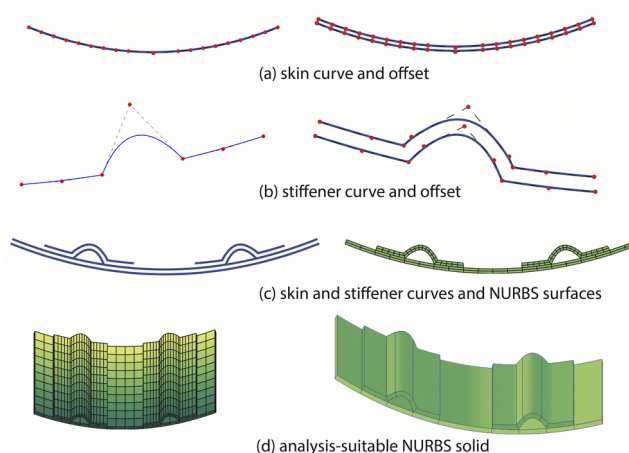
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Context

Isogeometric analysis is a numerical approach recently developed since 2005. This approach offers a possibility to take into account the exact geometry of devices. The challenge of the method is to how to combine the multi-patches in the same simulation without loss of accuracy. We have started the first IGA simulation for a magnetic patch. In order to model an electrical machine, the next step of simulation is to combine different patches in the same simulation

Objective

By using of the code Igafem (v2, free on internet), l'objectif of the internship is to model different pieces of an electrical machine. We will test with a very simple electrical machine. An investigation of the accuracy of the model and the computation cost could be made in order to compare with the classical finite element model .



Work steps

An important analytical work and bibliographic research are demanded. Basic knowledge about the finite element method is essential.

Key word

Isogeometric, finite element method

References

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- [Nguyen] VP Nguyen, C. Anitescu, S.P.A. Bordas, T. Rabczuk, "Isogeometric analysis: An overview and computer implementation aspects", *Mathematics and Computers in Simulation*, Volume 117, November 2015, Pages 89–116.