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Isogeometric analysis for flows around a cylinder

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Abstract

This note studies the accuracy of Isogeometric Analysis (IGA) applied in the simulation of incompressible flows around a cylinder in two and three dimensions. Quantities of interest, like the drag coefficient, the lift coefficient, and the difference of the pressure between the front and the back of the cylinder are monitored. Results computed with standard finite element methods are used for comparison.

Key words: Isogeometric Analysis (IGA); flow around a cylinder; drag coefficient; lift coefficient

1 Introduction

Isogeometric Analysis (IGA) is a rather new approach for the discretization of partial differential equations which was proposed in [9]. It can use non-uniform rational B-splines (NURBS) for the parametrization of the domain and at the

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