

Accepted Manuscript

Evaluation of a coupling interface for solving fluid structure interaction problems

Luciano Garelli, Marco Schauer, Gustavo Ríos Rodriguez, Sabine C. Langer, Mario A. Storti

PII: S0997-7546(15)30057-1

DOI: <http://dx.doi.org/10.1016/j.euromechflu.2016.04.001>

Reference: EJMFLU 3003

To appear in: *European Journal of Mechanics B/Fluids*

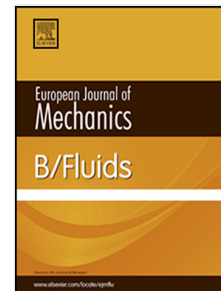
Received date: 21 April 2015

Revised date: 1 December 2015

Accepted date: 1 April 2016

Please cite this article as: L. Garelli, M. Schauer, G.R. Rodriguez, S.C. Langer, M.A. Storti, Evaluation of a coupling interface for solving fluid structure interaction problems, *European Journal of Mechanics B/Fluids* (2016), <http://dx.doi.org/10.1016/j.euromechflu.2016.04.001>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Evaluation of a coupling interface for solving fluid structure interaction problems

Luciano Garelli^{*,a}, Marco Schauer^b, Gustavo Ríos Rodríguez^a, Sabine C. Langer^c, Mario A. Storti^a

^a *Centro de Investigaciones de Métodos Computacionales, CIMEC (UNL - CONICET), 3000 Santa Fe, Argentina.
Tel.: +54 (0) 342 4511594 Fax: +54 (0) 342 4511595*

^b *Technische Universität Braunschweig - Institut für Statik, Beethovenstraße 51, 38106 Braunschweig, Germany.
Tel.: +49 (0) 531 391 7108*

^c *Technische Universität Braunschweig - Institut für Konstruktionstechnik, Langer Kamp 8, 38106 Braunschweig, Germany.
Tel.: +49 (0) 531 391 7101*

Abstract

This research work evaluates the performance of a Fluid Structure Interaction (FSI) solver, which is created using a generic interface to couple two independent software packages. The basic idea is to combine the advantages of the two independent codes to create a powerful FSI solver for two and three dimensional FSI analysis using the concept of modular programming. A detailed description about the implementation of an interface to couple a three-field system involved in the analysis is given, and this developed interface can be generalized to others codes. Since solving complex FSI problems is very time consuming, the focus of this work is placed on the performance of the coupled solver, for which a FSI benchmark will be solved on a computer cluster in order to measure speed up and efficiency.

Key words: Scalability, Fluid Structure Interaction, Partitioned Coupling.

^{*}Centro de Investigaciones de Métodos Computacionales, CIMEC (UNL - CONICET), 3000 Santa Fe, Argentina.
Tel.: +54 (0) 342 4511594 Fax: +54 (0) 342 4511595

Email addresses: lgarelli@intec.unl.edu.ar (Luciano Garelli),
m.schauer@tu-braunschweig.de (Marco Schauer)

Download English Version:

<https://daneshyari.com/en/article/7051203>

Download Persian Version:

<https://daneshyari.com/article/7051203>

[Daneshyari.com](https://daneshyari.com)