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FLUID-STRUCTURE INTERACTION, CONTACT AND INTERFACES

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ABSTRACT

Fluid-structure interaction (FSI) is the interaction between a movable or deformable structure and an internal or surrounding fluid flow, the dynamic behaviour of the fluid and the structure are coupled with each other. It is one of the most important fundamental models which is of very close relevance in many areas of engineering [1], such as in the fields of ocean engineering, energy and power engineering, industrial manufacturing, even biomedical engineering etc.

In addition, when there are multi-bodies [2] or multi-structures in the system, an impact-contact problem [3] would happen between the structures, which makes the interaction relationships more complex. Furthermore, if the FSI takes place on the surface of the liquid or there are gas phase around in the liquid, an interface force such as surface tension force would be considered according to its Weber number.

The fluid-structure interaction, contact and interfaces are actually connected with each other in engineering projects. Some mesh-based methods, such as Finite Element Method, and meshless method, such as SPH, and even combined method, such as Particle Finite Element Method were all employed to study these kinds of flow problems. Numerical models were established and improved to solve typical flows, however, some complex flows such as moored floating body and soft structure(s). etc., are attracting more concerns recently.

The contents of this Minisymposium is planned to focus on the fluid-structure interaction, impact-contact and interface actions, including the topics on numerical methods/models, accuracy/convergence and phenomenon/flow laws. Topics close to these topics are also welcome.

Zhongguo SUN, who submits the MS proposal, is the Assistant Dean of the School of Energy and Power Engineering in Xi'an Jiaotong University in China. He is the corresponding

organizer and will keep in contact with the Conference Secretariat. Another two co-organizers are from Technical University of Munich and École Centrale de Nantes, who are enthusiastic on joining WCCM XIV & ECCOMAS2020 and organizing a great MS.

This Minisymposium is planned to have two sessions, and two consecutive keynote lecturers (30 minutes each) followed by three invited papers (20 minutes each) will be included in each session. Excellent scholars in this area from Span, German, France, UK, China, Japan, Singapore and other country/area would be invited to join this MS and discuss the topic from numerical methods/models to fantastic phenomenon/perspective laws. These discussions and communications are expected to improve the investigation of methodologies and show inspiring research results to promote innovation and cooperation.

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