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ADVANCES IN POLYGONAL AND POLYHEDRAL METHODS TRACK NUMBER (1900)

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ABSTRACT

Recently, there has been a growing interest in the study of numerical methods for the approximate solution of partial differential equations (PDEs) on polygonal/polyhedral computational meshes. On the one hand, this is motivated by the geometric flexibility of polygonal/polyhedral meshes, allowing e.g. for hanging nodes, different cell shapes within the same mesh, non-matching interfaces, thus resulting in an increased geometric flexibility to correctly represent complicated geometries, interfaces, and heterogeneous media. On the other hand, polygonal and polyhedral methods offer an improved versatility for the accurate and efficient numerical approximation of a wide range of problems, including fluid dynamics, mechanics, acoustics or electromagnetism. The goal of this MS is to discuss the recent developments and advances in the field of polygonal and polyhedral numerical methods. The proposed topics include (but are not limited to) recent advances on: *i)* the design and analysis of polygonal and polyhedral methods; *ii)* their applications in fluid dynamics, mechanics, and electromagnetism; *iii)* h-, p-, and hp-adaptivity; *iv)* fast solution techniques; *v)* the challenges in code development on modern architectures.

We plan to organize the mini-symposium into 3 sessions, each session consisting of 1 keynote lecture of 40 minutes plus 4 invited contributions of 20 minutes each. As far as we are aware of, there will be one other MS proposal on polygonal/polyhedral methods for WCCM-ECCOMAS 2020, by Daniele Di Pietro, Jérôme Droniou, and Gianmarco Manzini. We are in contact and we plan to coordinate all together concerning the lists of speakers, but we strongly believe that there is a sufficiently large interest for that subject in the community to justify two different MS.