14th World Congress on Computational Mechanics (WCCM XIV)
8th European Congress on Computational Methods in Applied Science and Engineering (ECCOMAS 2020)
July 19- 24, 2020, Paris, France

DISCONTINUOUS GALERKIN METHODS: NEW TRENDS AND APPLICATIONS

200 - ADVANCED DISCRETIZATION TECHNIQUES

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Key words: Discontinuous Galerkin, high-order, Partial Differential Equations

ABSTRACT

Discontinuous Galerkin (DG) methods are a variant of the Finite Element Method, which considers an element-by-element discontinuous approximation, see for instance [1-3]. Many of them can be interpreted as a generalization of Finite Volume (FV) methods, but providing a natural framework for high-order computations and p-adaptivity. DG methods inherit several of the properties that make FV widely used in CFD, such as, inherent stabilization with proper definition of numerical fluxes, local conservation properties and efficiency for parallel computing. Despite the first DG methods were proposed in the early 1970's, DG methods have gained special attention from academy and industry in the last years, thanks to the recent developments and new trends. DG methods are currently being developed and applied in many areas of computational mechanics as aero-acoustics, gas dynamics, magneto-hydrodynamics, oceanography, reservoir simulation, turbo-machinery, turbulent flows, reactive flows, porous media, and other problems with multi-physical interactions and multiple scales. The objective of this mini-symposium is to bring together researchers working in different fields to discuss recent advances and new frontiers in DG methods. We also aim to create a forum in which researchers exchange ideas and identify emerging issues. We invite the submission of abstracts for papers discussing all aspects of DG methods. They include the design and analysis of new schemes, as well as novel applications in any branch of engineering and science. We also welcome presentations that address issues of robustness and efficiency for the solution of multi-scale and multi-physics applications, and topics such as high-order mesh generation, h/p-adaptivity, time-integration methods and space-time methods.

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