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Advanced Computational Techniques for Fractured Rock Hydrology

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closed (31 December 2018)

Message from the Guest Editor

Fractured rock hydrology is a subset discipline of strategical engineering sectors, such as geothermal energy, radioactive nuclear waste disposal, oil engineering, CO2 geological storage, fracking and groundwater resources. From the viewpoint of a computational analyst, the prediction of fluid flow and transport in fractured rocks is challenging, in consideration of the peculiarities of such media: Heterogeneity, scale-dependence, and directionality. Models require advanced mathematical tools in all the stages of setup: Acquisition of the physical and geometrical features of the rock mass, by using statistical inference procedures from data measured on observational outcrops and through pumping tests; definition of the appropriate equivalent medium for the simulations, i.e., a continuum-like medium or a discrete fracture network, and the related parameters; solution of the partial differential equations of the model, that, especially for discrete fracture networks, may require massive parallelization.

In this Special Issue call, the aim is to offer the state-of-the-art of the most advanced computational tools for the discipline.

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Mathematical and Computational Applications (*MCA*) is devoted to the dissemination of original research in the field of engineering, natural sciences and social sciences where mathematical and/or computational techniques are necessary for solving specific problems. The aim of the journal is to provide a medium by which a wide range of experience can be exchanged among researchers from diverse fields such as engineering (electrical, mechanical, civil, industrial, aeronautical, nuclear, etc.), natural sciences (physics, mathematics, chemistry, biology, etc.) and social sciences (administrative sciences, economics, political sciences, etc.).

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