

# Nonlinear difference and differential problems, transformations, homogenization techniques & applications

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This session is devoted to new and interesting results concerning the theory and applications of difference problems and differential problems. Because of the complex geometry of the domain, transport or diffusion phenomena or new material which might exhibit inhomogeneities can be not easily handled from a numerical point of view. Accordingly, various mathematical techniques are of interest to their study. Among them we may mention homogenization techniques and nonlinear transformations such as Bäcklund transformations. Bäcklund transformations among solutions of differential equations are often interpreted as discrete maps and in this respect they provide a powerful tool in the discretization of integrable PDEs or integrable ODEs. The application of theoretical results to all the aspects related to the discretization of nonlinear differential equations are particularly welcome.