

**Topological and Variational Methods
for Differential and Difference Equations
Special Session A12**

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The investigation of ordinary differential equations and systems maintains a constant interest in the mathematical literature. This has never been more apparent than in recent years with the exploding interest in the fractional calculus and fractional differential equations. The great attention towards these equations and systems is mainly due to their role as models in many areas of science and technology such as in diffusion processes, celestial mechanics, flows in porous media, population dynamics, epidemic models, and more recently in social science areas. These equations and systems are also used to obtain solutions to diffusion and transport equations that are often in good agreement with experimental data. In some cases, the underlying process is discretized, which justifies the study of the associated discrete models.

New requests by the scientific community and the development of new mathematical tools serve to motivate interesting recent achievements in several directions.

The main mathematical tools in these studies are topological or variational methods. In some cases, these techniques can be successfully combined with comparison-type techniques such as the upper and lower solution method.

The aim of this special session is to advance knowledge and interest in the study of all these types of problems by inviting researchers to participate and share their current research endeavors.

