Editorial

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The general framework in which planets and natural and artificial satellites are studied shows a striking complexity as far as the dynamical behavior of such objects is investigated. The papers appearing in this special issue “Complexity in the Dynamics of Planetary Systems”, as well as in a forthcoming issue titled “Methods in Astrodynamics”, witness the progress in the field. For example, we see the innovative developments and applications of several mathematical topics, most notably related to perturbation theories, invariant manifolds and long-term behavior of the celestial bodies. But we also enjoy the development of dynamical system methods to protect our planet from dangerous asteroids or space debris.

One of the most appealing aspects of Celestial Mechanics is that it acts as a cross-junction between purely mathematical theories, semi-analytical methods, numerical results and space missions. The interplay between theory and applications is nowadays very wide, thus making Celestial Mechanics a very rich and varied discipline. These multi-faceted aspects are reflected by the fields of interest of the community of CELMEC: some of its contributions are published as original articles in the two special issues.

All the novelties appearing in the two issues pave the way to a bright future of Celestial Mechanics.

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