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Shape Dynamics

Guest Editor:

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Deadline for manuscript submissions:
closed (15 August 2022)

Message from the Guest Editor

Shape dynamics is the modern incarnation of 'relationalism': in essence, the idea that all geometric, kinematical, and dynamical structures in physics should be determined by the internal state of the universe, rather than by something external to it. This leads to the need to systematically remove all 'absolute' structures from physics. More specifically, shape dynamics is a formulation of general relativity in terms of a dynamical three-dimensional conformal field theory, which is time-reparametrization-invariant.

Revisiting well-known solutions of general relativity in shape-dynamical terms has shed some new light on classical gravity, in particular on the nature of singularities, on the problem of the arrow of time, and black holes and gravitational collapse.

This Special Issue will cover current research in shape dynamics and closely-related areas (e.g., N-body toy models), with a particular focus on the consequences of the distinctive symmetries of the theory: scale/conformal invariance and time reparametrization invariance.

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Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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