

Special Issue

Relativity Based on Symmetry— Part II

Message from the Guest Editor

We present a mathematically simple and physically meaningful relativistic model which unifies gravity, electromagnetism, optics and even some quantum behavior. Unification is achieved by implementing Riemann's idea "force equals geometry". Geometry is described by a simple, physically meaningful action function defined in the frame of an inertial observer. This action is determined by Lorentz covariance and the symmetries of the problem. The dynamics are defined using the Least Action Principle... The model presented here first appeared in *A Novel Approach to Relativistic Dynamics: Integrating Gravity, Electromagnetism and Optics* by Y. Friedman and T. Scarr, Springer Nature 2023. The foundations of the model are fully explained and developed in the book, and one will find there many open avenues for further research. The results in this Special Issue of *Symmetry* are the first such fruits.

Guest Editor

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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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