Special Issue

A Commemorative Special Issue in Honor of Prof. Carl H. Brans: At the Frontier of Spacetime

Message from the Guest Editors

The presence of exotic differential structures on differential manifolds was first discovered in the middle of the 20th century for five-dimensional and higher manifolds. In the 1980s, there was a real breakthrough in four-dimensional manifolds using gauge-theory methods inspired by theoretical physics. With these methods, it was possible to infinitely construct many exotic smoothness structures on many four-dimensional manifolds. Among the many surprising innovations was the confirmation that the seemingly trivial space R4 had an infinite number of manifolds. Carl Brans was the first to point to the importance of this fact in theoretical physics, in particular with regard to general relativity. The Brans conjecture became a driving force in this topic for many years. The primary goal of this Special Issue is to commemorate the outstanding mathematical physicist Carl Brans; discuss the importance of the existence of exotic differential structures for modelling the physical world; and address the general interplay between mathematics and physics. We encourage scientists active, as well as historians and philosophers of science, as well as other issues related to the subject.

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Message from the Editor-in-Chief

The journal *Mathematics* publishes high-quality, refereed papers that treat both pure and applied mathematics. The journal highlights articles devoted to the mathematical treatment of questions arising in physics, chemistry, biology, statistics, finance, computer science, engineering and sociology, particularly those that stress analytical/algebraic aspects and novel problems and their solutions. One of the missions of the journal is to serve mathematicians and scientists through the prompt publication of significant advances in any branch of science and technology, and to provide a forum for the discussion of new scientific developments.

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