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Special issue: Noncommutative Geometry in Physics

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SCOPE

Noncommutative geometry is a very general mathematical paradigm arising from quantum mechanics. As such, it permeates different branches of mathematics and physics. This issue is intended to present the many facets of emergence of noncommutativity in physics.

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Topics to be covered include:

- Quantization and noncommutative geometry (deformation quantization and other types of quantizations, additional structures on quantum spaces, such as differential calculi or Dirac operators, metrics on state spaces, links to quantum information theory and information geometry)
- Noncommutative geometry in high energy physics (Connes' approach to the Standard Model coupled with gravity)
- Noncommutative geometry in gravity and cosmology (noncommutative Riemannian geometry, quantum spacetime, phenomenology of NCG models of quantum gravity)
- Nongeometric backgrounds in string and field theories (backgrounds described by NC and nonassociative geometries, T-dualities, gravity/CYBE correspondence, dual noncommutative Yang-Mills theories)
- Noncommutative geometry in condensed matter physics and materials science, as a tool for discovery and characterization of novel thermodynamic phases and dynamical behaviors
- Noncommutative quantum field theories (star products in QFTs and regularization/renormalization, noncommutative models with UV-IR mixing)
- Quantum groups in physics (quantum symmetries of physical models)

Papers should be clearly motivated by actual or potential application to physical phenomena.

5 DAYS

Median submission to first decision before peer review

62 DAYS

Median submission to first decision after peer review

1.996

Journal Impact Factor

4.1

Citescore