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Fractional Calculus in Magnetic Resonance

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Deadline for manuscript submissions:
closed (31 December 2021)

Message from the Guest Editors

The applications of fractional calculus in the field of magnetic resonance are widespread and growing. In particular, we can extend the capabilities of nuclear magnetic resonance (NMR), electron spin resonance (ESR), and magnetic resonance imaging (MRI) by the generalization of the integer-order derivatives found in the governing equations (Bloch, and Bloch–Torrey equations). Solutions obtained using fractional calculus illuminate the structure and dynamics of materials at the molecular, cellular, and tissue length scales.

The purpose of this Special Issue is to gather articles reflecting the latest developments of fractional calculus in the fields of nuclear magnetic resonance (NMR), electron spin resonance (ESR), and magnetic resonance imaging (MRI). Applications employing fractional calculus in the sub-disciplines of NMR/ESR spectroscopy, relaxation, diffusion, and MRI are encouraged.

Keywords

- Fractional calculus
- Magnetic resonance
- Magnetic resonance imaging
- Nuclear magnetic resonance
- Electron spin resonance
- Spectroscopy
- Relaxation
- Diffusion

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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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