SOME MATHEMATICAL PROBLEMS IN FUNDAMENTAL PHYSICS

YING-QIU GU

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This paper presents several unresolved problems that the author has encountered in the study of unified field theory and seeks input from colleagues in the field. These problems include the algebraic and variational relations between frames and the metric, the negative energy confinement of the nonlinear spinor field and its relationship with the Pauli exclusion principle, as well as counterexamples and a dynamic analysis of the singularity theorem. This paper briefly introduces the background of these problems, allowing readers to quickly understand their nature and current status. Solving these problems may enhance our understanding of the laws of nature.

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