Definability and a Nonlinear Sigma Model

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Abstract

The concept of definability of physical fields is introduced and a set-theoretical foundation is proposed. In this foundation, we obtain a scale invariant nonlinear sigma model and then show that quantization of the model is necessary and sufficient for definability. We also obtain compactification of the spatial dimensions effectively and show its equivalence to quantization.

Keywords:	Definability, Nonlinear Sigma Model, Compactification, Scalar Invariance, Axiomatic, Foundations of Physics
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