

Abstract Submitted
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Two Fundamental Principles of Nature's Interactions¹ TIAN MA, Sichuan University, SHOUHONG WANG, Indiana University — In this talk, we present two fundamental principles of nature's interactions, the principle of interaction dynamics (PID) and the principle of representation invariance (PRI). Intuitively, PID takes the variation of the action functional under energy-momentum conservation constraint. PID offers a completely different and natural way of introducing Higgs fields. PRI requires that physical laws be independent of representations of the gauge groups. These two principles give rise to a unified field model for four interactions, which can be naturally decoupled to study individual interactions. With these two principles, we are able to derive 1) a unified theory for dark matter and dark energy, 2) layered strong and weak interaction potentials, and 3) the energy levels of subatomic particles.

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