

Whispers from the Dark Universe - Particles & Fields in the Gravitational Wave Era

CLUSTER OF EXCELLENCE
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WHISPERS FROM THE DARK UNIVERSE – PARTICLES & FIELDS IN THE GRAVITATIONAL WAVE ERA

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Jet Bundle Methods for Scalar EFTs

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Geometric formulations of EFTs formulate fields as coordinates on a field space manifold, which provides an alternative method of studying theories by relating physical quantities emerging from the two derivative term to geometric tensors.

Jet Bundles provide us with the tools to express any scalar Lagrangian of any derivative order in terms of a (pseudo-)Riemannian metric, thus allowing us to expand upon prior formulations by relating all physical quantities to geometric tensors on the appropriate jet bundle order. Field redefinitions and the invariance of the S-matrix find a natural description in terms of diffeomorphisms and the transformation of tensors under them.

The talk will introduce the mathematical formalism of Jet Bundles showing how they can be utilized in the context of EFTs as well as showing some examples of their applications.

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