



Contribution ID: 243

Type: **PhD forum talk + poster**

Charting the Fifth Force Landscape

Monday, May 31, 2021 6:00 PM (6 minutes)

In recent years particle physics research has undergone somewhat of a phase transition, looking increasingly towards hidden sectors and the feebly interacting frontier. In this talk I will introduce a new approach to parameterising dark sector forces, underpinned by the Källén-Lehman representation, in which the effects of any general scalar fifth force are captured by a single positive-definite spectral function. Using this language, I will demonstrate how the effects of loop-level forces can be simply obtained, without needing to explicitly perform loop calculations. I will also show how experimental observables can be expressed in completely general terms, facilitating the straightforward extraction of limits to any specific model. Finally, I will discuss how this framework opens the possibility to speculatively probe violations of unitarity, causality or locality within hidden sectors

arXiv number (if applicable)

arXiv:2009.12399

Primary authors: BANKS, Hannah (University of Cambridge); MCCULLOUGH, Matthew (CERN)

Presenter: BANKS, Hannah (University of Cambridge)

Session Classification: PhD Forum