TF02: Effective field theory techniques

Co-Conveners: Patrick Draper (UIUC), Ira Rothstein (CMU) slack: #tf02-eft

Description

Effective field theory (EFT) is a conceptual and analytic framework underpinning much of modern theoretical physics. EFT is a methodology which allows one to describe low energy physics while systematically accounting for the effects of high energy physics. EFTs have been developed to address a diverse range of fields, including QCD, Beyond the Standard Model physics, classical and quantum gravity, and condensed matter physics. This topical group will focus on the forefront of EFT research in the aforementioned fields as well as the theoretical limits imposed on EFTs when they are embedded in theories of quantum gravity.

Subtopics to be explored:

- SCET
- SMEFT
- Naturalness problems
- Swampland/WGC
- EFTs from amplitudes
- Connections to CMT
- Anomaly matching techniques
- EFT for inflation
- NRGR
- EFT of Dark Matter

+ ...

Whitepapers & LOIs

Should…

—highlight recent progress
—give (the authors' impression of) where the field is going & goals

Don't need to…

—be longer than 4-5 pages
—present new research

Deadline March 2021

LOIs/Whitepapers -> Topical Summary -> Frontier Summary -> … -> P5

Overlaps

EFT is a broad topic relevant for
other TF topical groups and Project Frontiers.

Project Frontiers

- ENERGY FRONTIER
- NEUTRINO PHYSICS FRONTIER
- RARE PROCESSES AND PRECISION
- COSMIC FRONTIER

TF02's primary focus is developing new EFTs & foundations of EFT

want to connect with other efforts while avoiding duplication

suggest keeping an eye on relevant LOIs and whitepapers submitted to the PFs.
each PF has a theorist subconvener: reach out to them, discuss plans, synergize messaging

likewise, use slack to communicate your whitepaper ideas and plans to the theory community: form collaborations, distribute workload, and avoid duplication

https://snowmass21.org/submissions/start

Instructions for submitting to the Snowmass Proceedings

To submit a paper to the proceedings:

1. Post it on the arXiv in the appropriate subject class. Write in the Comments box of the arXiv submission: "contribution to Snowmass 2021". The paper is strongly encouraged to start with an Executive Summary. A long paper without an Executive Summary wil not be effective.
2. Send an email to the proceedings editor Michael Peskin announcing your contribution and asking that it be included in the index above. For interdisciplinary articles, it is permissible to request links on two or more different frontier pages.
    - Email to: mpeskin AT slac.stanford.edu, glennap AT slac.stanford.edu
    - Subject line: "contribution to Snowmass 2021".

Specify TF02 & any cross-lists