



Contribution ID: 203

Type: **Oral Presentation**

Finite-volume effects in a calculation of the rare Hyperon decay $\Sigma^+ \rightarrow p\ell^+\ell^-$

Thursday, 11 August 2022 12:30 (20 minutes)

The rare Hyperon decay $\Sigma^+ \rightarrow p\ell^+\ell^-$, potentially sensitive to new physics beyond the Standard Model, is currently being pursued in an exploratory calculation by the RBC/UKQCD collaboration. At the physical pion mass, intermediate $N\pi$ states lead to poles in lattice quantities, which need to be removed to extract the physical amplitude. We present the formalism to achieve this and comment on the role of tuning lattice volumes specifically to account for these intermediate states.

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Session Classification: QCD in searches for physics beyond the Standard Model

Track Classification: QCD in searches for physics beyond the Standard Model