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## Electromagnetic pion mass splitting using PV-regulated photon propagator

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Many hadronic observables are nowadays computed in lattice QCD with a sub-percent precision which requires the inclusion of isospin-breaking and electromagnetic effects. Most of the methods that implement the photon propagator in finite-volume lead to power-law suppressed finite size effects. These are due to the long-range nature of electromagnetism and make reliable predictions computationally demanding. This issue can be avoided by working with a regulated photon propagator (introducing a Pauli-Villars mass  $\Lambda$ ) directly in continuum and infinite volume. This feature can be profitably exploited to improve the determination of leading-order electromagnetic corrections to several observables such as the HVP or nucleon masses. In this work we test this strategy for the charged/neutral pion mass difference  $M_{\pi^+} - M_{\pi^0}$  using CLS  $n_f = 2 + 1$  ensembles. We show preliminary results addressing both the dependence on the regulator  $\Lambda$  and the chiral-continuum extrapolation with pion masses between 160 and 280 MeV and lattice spacing in the range  $[0.049, 0.085]$  fm.

### Parallel Session (for talks only)

Quark and lepton flavor physics

**Author:** DE SANTIS, Alessandro (Helmholtz-Institut Mainz, Johannes Gutenberg-Universität Mainz)

**Presenter:** DE SANTIS, Alessandro (Helmholtz-Institut Mainz, Johannes Gutenberg-Universität Mainz)

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