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Topology in electromagnetic fields and the axion-photon coupling

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The introduction of parallel electric and magnetic fields in the QCD vacuum enhances the weight of topological sectors with a non-zero topological charge. For weak fields, there is a linear response for the topological charge. We study this linear response which can be interpreted as the axion-photon coupling. In this work we use lattice simulations with improved staggered quarks including background electric and magnetic fields.

Primary authors: BRANDT, Bastian (University of Bielefeld); CUTERI, Francesca (Goethe University); ENDRŐDI, Gergely (University of Bielefeld); MARKÒ, Gergely (University of Bielefeld); HERNÁNDEZ HERNÁNDEZ, José Javier (Bielefeld University)

Presenter: HERNÁNDEZ HERNÁNDEZ, José Javier (Bielefeld University)

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