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Structure-Dependent Electromagnetic Finite-Size Effects

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In this talk we present a relativistic and model-independent method to analytically derive electromagnetic finite-size effects beyond the point-like approximation. Structure-dependence appears in terms of physical form-factors and derivatives thereof. The values of these physical quantities can be taken either from experimental measurements or auxiliary lattice calculations. We apply our method to derive the leading structure-dependence in the meson mass, i.e. at order $1/L^3$, and compare to that obtained from non-relativistic effective field theory techniques. In addition, we determine the coefficient of the $1/L^2$ -term in leptonic decays of pions and kaons. The knowledge of the latter allows for improved numerical control in extractions of the relevant CKM-matrix elements from lattice QCD+QED.

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