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What Can We Learn from Hadronic and Radiative Decays of Light Mesons?

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Chiral perturbation theory offers a powerful tool for the investigation of light pseudoscalar mesons. It incorporates the fundamental symmetries of QCD, interrelates various processes, and allows to link these to the light quark masses. Its shortcomings lie in a limited energy range: the radius of convergence of the chiral expansion is confined to below resonance scales. Furthermore, the strongest consequences of chiral symmetry are manifest for pseudoscalars (pions, kaons, eta) only: vector mesons, e.g., have a severe impact in particular for reactions involving photons. In this talk, I advocate dispersions relations as another model-independent tool to extend the applicability range of chiral perturbation theory. They even allow to tackle the physics of vector mesons in a rigorous way. It will be shown how dispersive methods can be used to resum large rescattering effects, and to provide model-independent links between hadronic and radiative decay modes. Examples to be discussed will include decays of the eta meson, giving access to light-quark-mass ratios or allowing to test the chiral anomaly; and meson transition form factors, which have an important impact on the hadronic light-by-light-scattering contribution to the anomalous magnetic moment of the muon.