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### **Test Fundamental Symmetries via Precision Measurements of Light Meson Decays<sup>1</sup>**

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Light meson decays provide a unique laboratory to test fundamental symmetries and to search for new physics beyond the Standard Model (SM). There have been exciting experimental programs in the precision measurement of light pseudoscalar meson decays at Jefferson Laboratory. A comprehensive Primakoff experimental program is aimed at gathering high precision measurements on the two-photon decay widths and the transition form factors at low  $Q^2$  of  $\pi^0$ ,  $\eta$  and  $\eta'$  via the Primakoff effect. The results of these measurements will provide sensitive probes to test the chiral anomaly and to study the origin and dynamics of chiral symmetry breaking. On the other hand, a recently developed Jlab Eta Factory (JEF) experiment will measure a various SM allowed or forbidden  $\eta$  decays with a reduction of the background by almost two orders of magnitude in the rare neutral modes compared to other existed or planned experiments. It will offer a rich dataset to test confinement QCD symmetries and to probe new physics by searching for a dark leptophobic gauge boson and new C violating, P conserving force. A overview of these experimental activities and their physics impacts will be presented.

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