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How to find the glueball among the f_0 s with the QCD counting rules

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We propose a model-independent method to ascertain the leading valence composition of a hadron: to measure the energy dependence of its production cross section at a fixed angle interval. This E-dependence, by the QCD Brodsky-Farrar counting rules, falls at high energy with a steepness that depends on the leading quark and gluon composition.

We exemplify with a reaction that could help classify the f_0 mesons, exclusive $e^+e^- \rightarrow \phi + f_0$ with an easily reconstructible final state. Some of the f_0 may have a glueball gg component in their wavefunction decomposition; this will dominate at high energy over higher twist quark-antiquark components (because they necessarily have a p-wave) or hybrid/tetraquark components (because of the higher number of particles in the final state). We discuss the prospects to carry out this or similar analysis in Belle II.

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