Abstract Submitted
for the HAW14 Meeting of
The American Physical Society

Hadron mass scaling near an s-wave threshold TETSUO HYODO, Yukawa Institute for Theoretical Physics, Kyoto University — We study the influence of a two-hadron threshold when the hadron mass scales with respect to some QCD parameters. We derive the general behavior of the energy of the bound state and resonance near the two-body threshold from the expansion of the Jost function at zero energy. For a threshold in p- or higher partial waves, the scaling low of the stable bound state continues across the threshold describing the real part of the resonance energy. In contrast, the leading contribution of the scaling is forbidden by the nonperturbative dynamics near an s-wave threshold, and the bound state cannot directly turn into a resonance. This universal behavior is a consequence of the vanishing of the field renormalization constant of the zero energy bound state in s-wave.

Tetsuo Hyodo
Yukawa Institute for Theoretical Physics, Kyoto University

Date submitted: 27 Jun 2014 Electronic form version 1.4