

Abstract Submitted
for the HAW14 Meeting of
The American Physical Society

Study for the elementarity of composite systems HIDEKO NAGAHIRO, Nara Women's University, ATSUSHI HOSAKA, RCNP, Osaka University — Recently, the hadronic composite states have been studied extensively in the context of the dynamically generated states. The question of “elementarity” has been studied by using the wave function renormalization constant Z [1, 2]. The attempts have been made not only for bound states but also for resonant states [3–5]. In this talk, we show that the renormalization constant Z can be zero for any composite state dynamically generated by a Weinberg-Tomozawa type interaction. We discuss the underlying mechanism of $Z = 0$ for composite systems and how we should employ the renormalization constant Z to understand the nature of hadrons [6]. We also discuss a special case of the zero-energy bound state. We show that the meaning of the condition $Z = 0$ for a barely bound system can be different from that of finite binding energy or resonant case.

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- [4] H. Nagahiro et al., PRD83(11)111504.
- [5] H. Nagahiro and A. Hosaka, PRC88(13)055203.
- [6] H. Nagahiro and A. Hosaka, e-print arXiv:1406.3684 [hep-ph].

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Date submitted: 18 Jun 2014

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