

Abstract Submitted
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S-wave $\pi-K$ scattering length from lattice QCD KIYOSHI SASAKI,
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Tsukuba University, MAKOTO OKA, Tokyo Institute of Technology — We present
the S-wave $\pi-K$ scattering lengths for both the isospin 1/2 and 3/2 channels evalu-
ated by using the finite size formula. We utilize the $N_f = 2 + 1$ gauge configurations
generated on $32^3 \times 64$ lattice using the Iwasaki gauge action and the $O(a)$ -improved
Wilson action at $1/a = 2.17$ GeV. The quark masses correspond to $m_\pi = 0.30 -$
 0.70 GeV. For $I = 1/2$, to separate the effects from excited states, we construct a
 2×2 matrix of the time correlation function and diagonalize it. Here, we adopt the
two kinds of operators, $\bar{s}u$ and $\pi - K$. Our preliminary results show signs of the
scattering lengths in agreement with experiment, namely attraction in $I = 1/2$ and
repulsion in $I = 3/2$. We investigate the quark-mass dependence of the scattering
length and also discuss the limitation of chiral perturbation theory.

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