

# Results for the mass difference between the long- and short-lived K mesons for physical quark masses

*Friday, July 27, 2018 3:40 PM (20 minutes)*

The two neutral kaon states in nature, the KL (long-lived) and KS (short-lived) mesons, are the two time-evolution eigenstates of the  $K^0 - \bar{K}^0$  mixing system. The prediction of their mass difference  $\Delta M_K$  based on the Standard Model is an important goal of lattice QCD. In this talk, I will present preliminary results from a calculation of  $\Delta M_K$  performed on an ensemble of  $64^3 \times 128$  gauge configurations with inverse lattice spacing of 2.36 GeV and physical quark masses. These new results come from twice the Monte Carlo statistics used for the result presented in last year's conference. Further discussion of the methods employed and the resulting systematic errors will be given.

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**Session Classification:** Weak Decays and Matrix Elements

**Track Classification:** Weak Decays and Matrix Elements