

Erratum: Dynamical Quark Effects on Light Quark Masses [Phys. Rev. Lett. 85, 4674 (2000)]

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The improved axial current should be defined as $A_\mu^{\text{imp}} = A_\mu - c_A \nabla_\mu P$ with our definition of the axial current $A_\mu = \bar{q} \gamma_5 \gamma_\mu q$. The sign given in our Letter for the second term in the definition of A_μ^{imp} is opposite to this. This error affects the AWI quark masses. The VWI masses are unchanged.

Table II summarizes the corrected results for the AWI masses in two-flavor QCD. From the combined continuum extrapolation shown in Figs. 1 and 2, we obtain

$$m_{ud}^{\overline{\text{MS}}}(2 \text{ GeV}) = 3.45^{+0.14}_{-0.20} \text{ MeV}, \quad (3)$$

$$m_s^{\overline{\text{MS}}}(2 \text{ GeV}) = 89^{+3}_{-6} \text{ MeV} \quad M_K \text{ input}, \quad (4)$$

$$= 90^{+5}_{-10} \text{ MeV} \quad M_\phi \text{ input}, \quad (5)$$

where statistical and systematic errors listed in Table III are combined in quadrature. The corrected results in quenched

TABLE II. AWI quark masses (in MeV) in the $\overline{\text{MS}}$ scheme at $\mu = 2 \text{ GeV}$ for each β , and in the continuum obtained by linear fits in a (for these fits χ^2/N_{DF} is also given). All errors are statistical.

β	m_{ud}^{AWI}	$m_s^{\text{AWI}} (K)$	$m_s^{\text{AWI}} (\phi)$
1.8	3.094 (35)	81.75 (93)	105.4 (2.2)
1.95	3.171 (37)	83.13 (95)	104.5 (1.6)
2.1	3.245 (45)	84.3 (1.1)	96.9 (2.2)
$a \rightarrow 0$	3.39 (9)	86.9 (2.3)	90.7 (4.7)
χ^2/N_{DF}	0.02	0.001	2.99

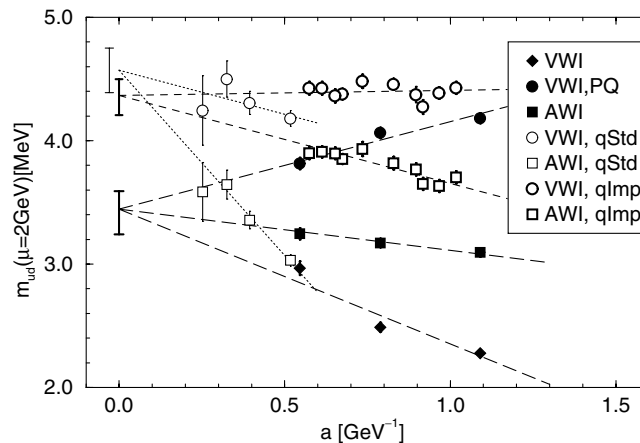


FIG. 1. Continuum extrapolation of the average up and down quark mass m_{ud} for full QCD (filled symbols) and quenched QCD (thick open symbols) obtained with the improved action, and quenched results with the standard action (thin open symbols).

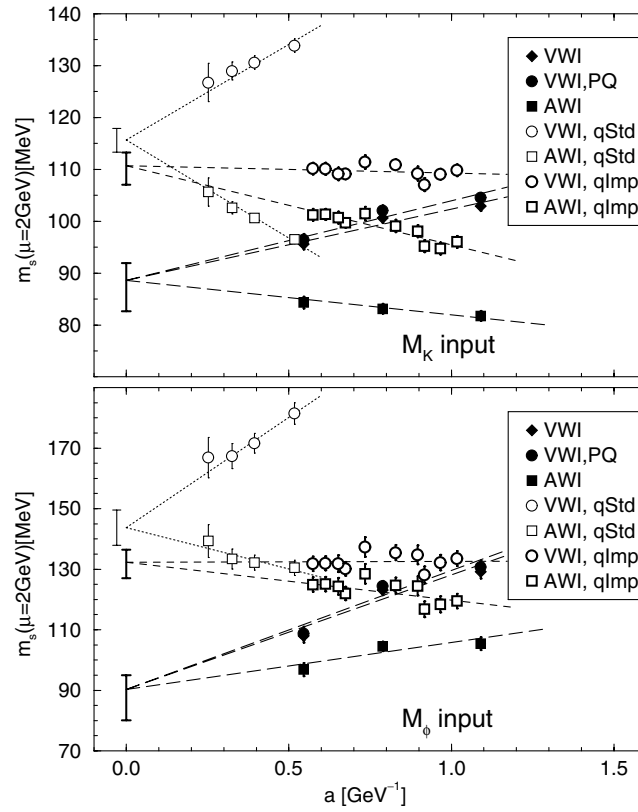


FIG. 2. Continuum extrapolation of the strange quark mass m_s . Symbols have the same meaning as in Fig. 1.

QCD are $m_{ud}^{\overline{\text{MS}}}(2 \text{ GeV}) = 4.37^{+0.13}_{-0.16} \text{ MeV}$ and $m_s^{\overline{\text{MS}}}(2 \text{ GeV}) = 111^{+3}_{-4} \text{ MeV}$ (M_K -input) or $132^{+4}_{-5} \text{ MeV}$ (M_ϕ -input).

The change of m_{ud} and m_s in the continuum limit is quite small (at most 1%) both in full and quenched QCD, since the $O(a)$ correction to A_μ^{imp} vanishes toward this limit. Our conclusions are therefore unchanged.

TABLE III. Contributions to total error in continuum limit.

	Stat.	Chiral	Z factor	Cont. Ext.
m_{ud}	+2.8%	+1.4%	+2.5%	+1.4%
	-2.8%	-2.0%	-4.6%	-1.6%
m_s (K input)	+2.7%	+1.1%	+2.1%	+1.0%
	-2.7%	-2.1%	-5.4%	-2.0%
m_s (ϕ input)	+4.8%	+0.3%	+1.8%	+0.5%
	-4.8%	-7.8%	-6.6%	-0.3%