Discussion on Universality of quenched QCD Wilson vs. KS

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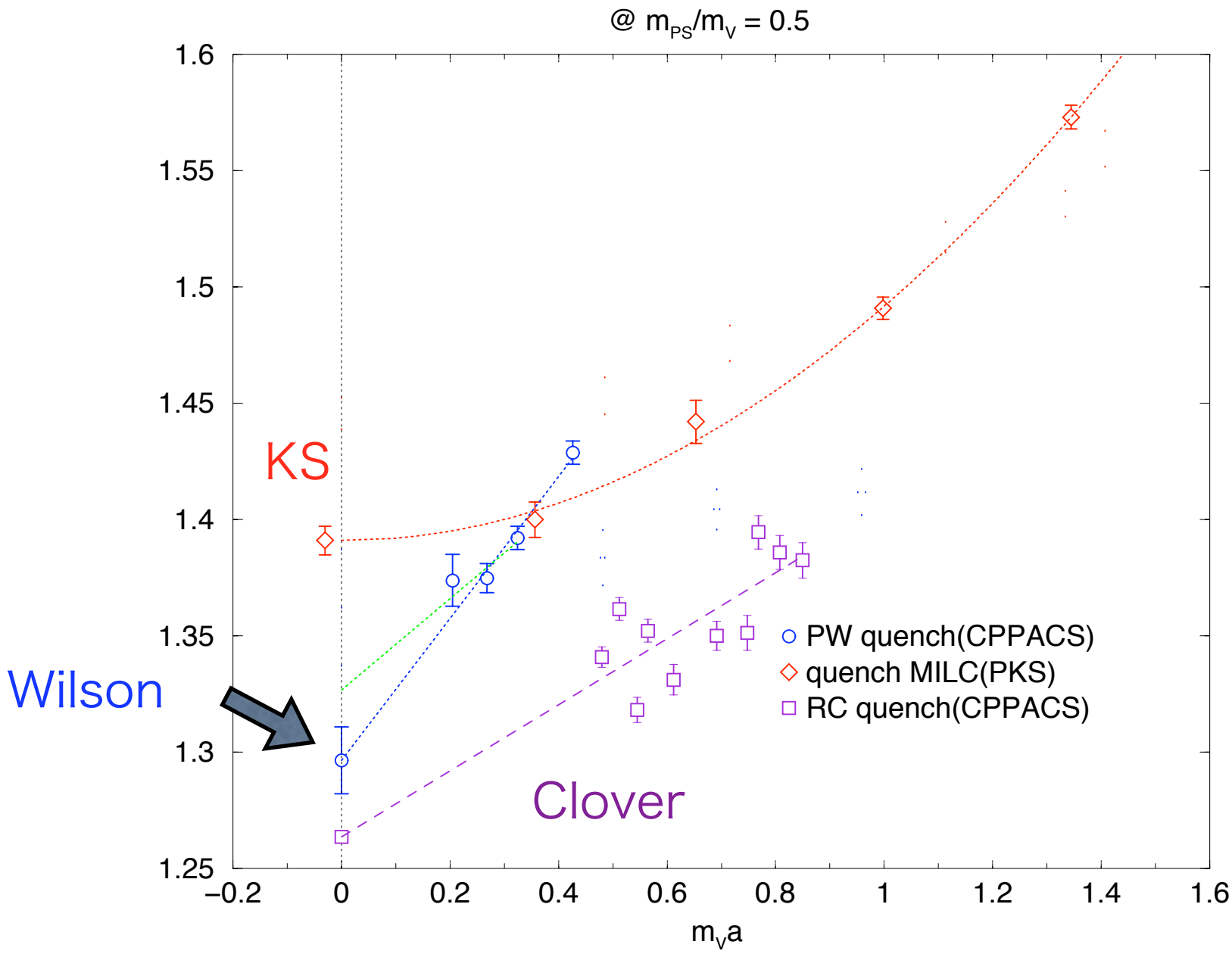
S. Aoki (Lat2000)

m_N/m_V vs $m_V a$

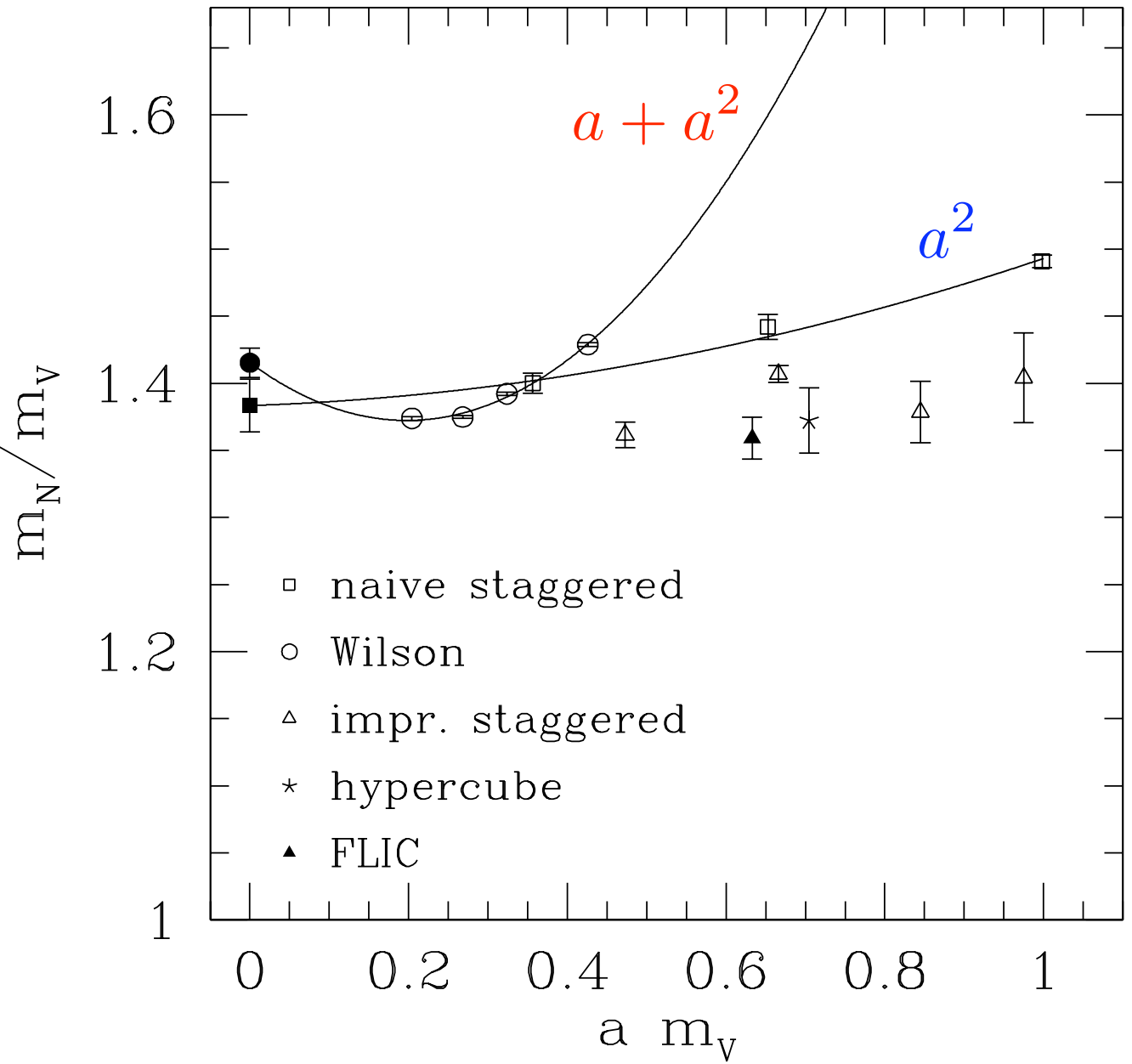
$m_{PS}/m_V = 0.5$



P. Hasenfratz (Lat2001) Large scaling violation of KS ?

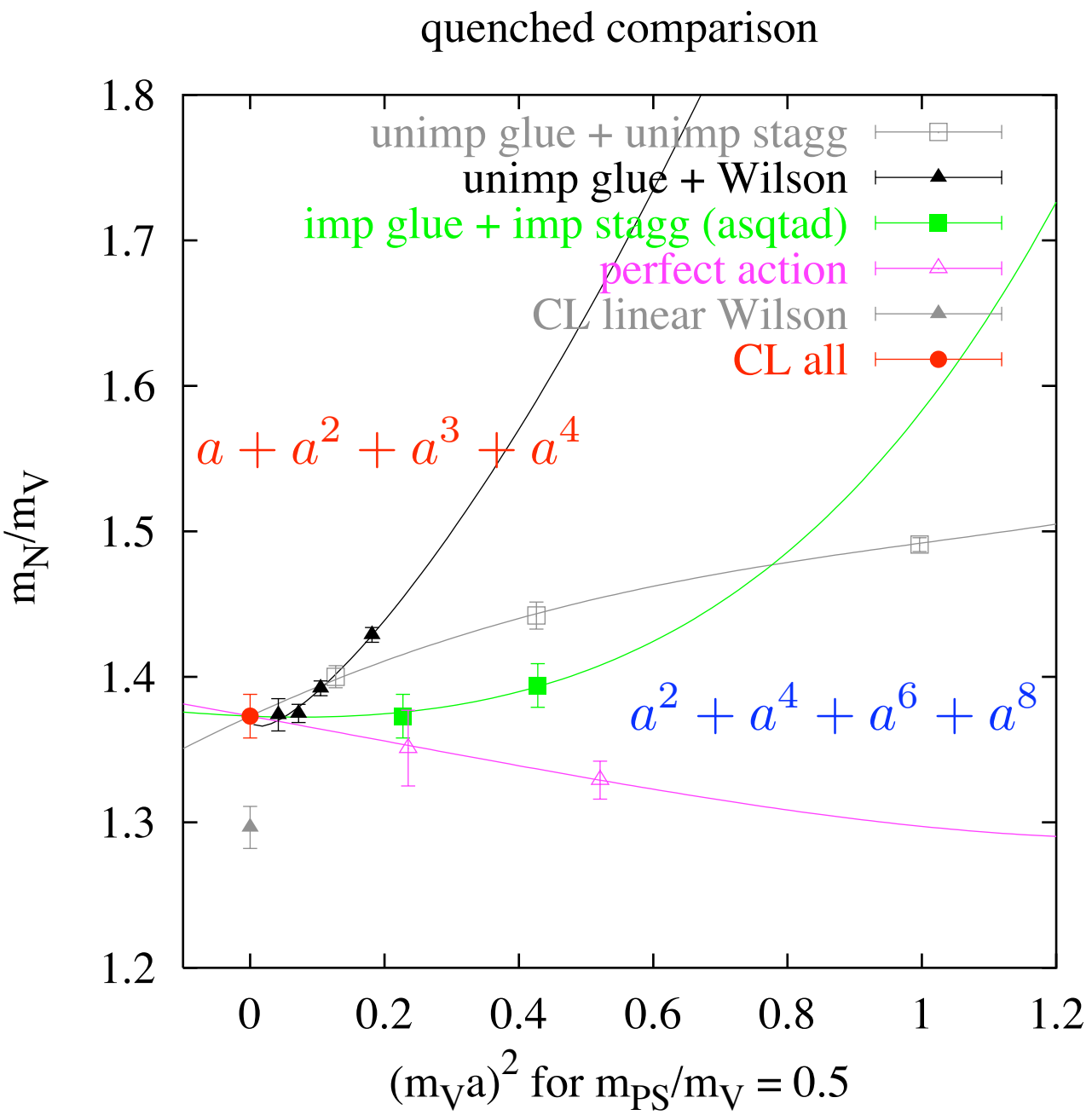
K. Jansen (Lat2003)

$m_{\rm PS}/m_{\rm V} = 0.7$



"perform a precise scaling analysis for various fermion action in the quenched approximation"

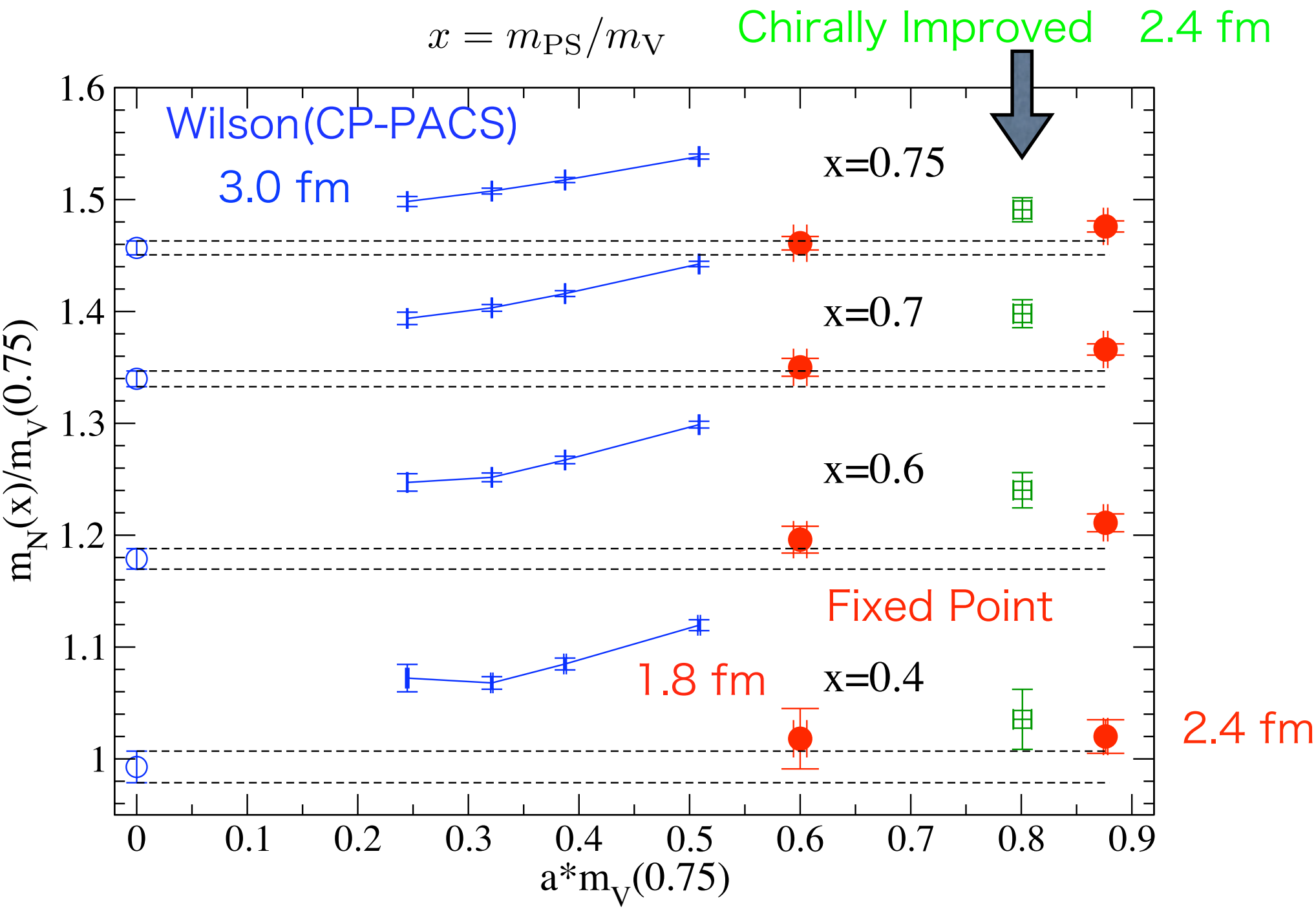
Davies, Lepage, Niedermayer, Toussaint (Lat2004)



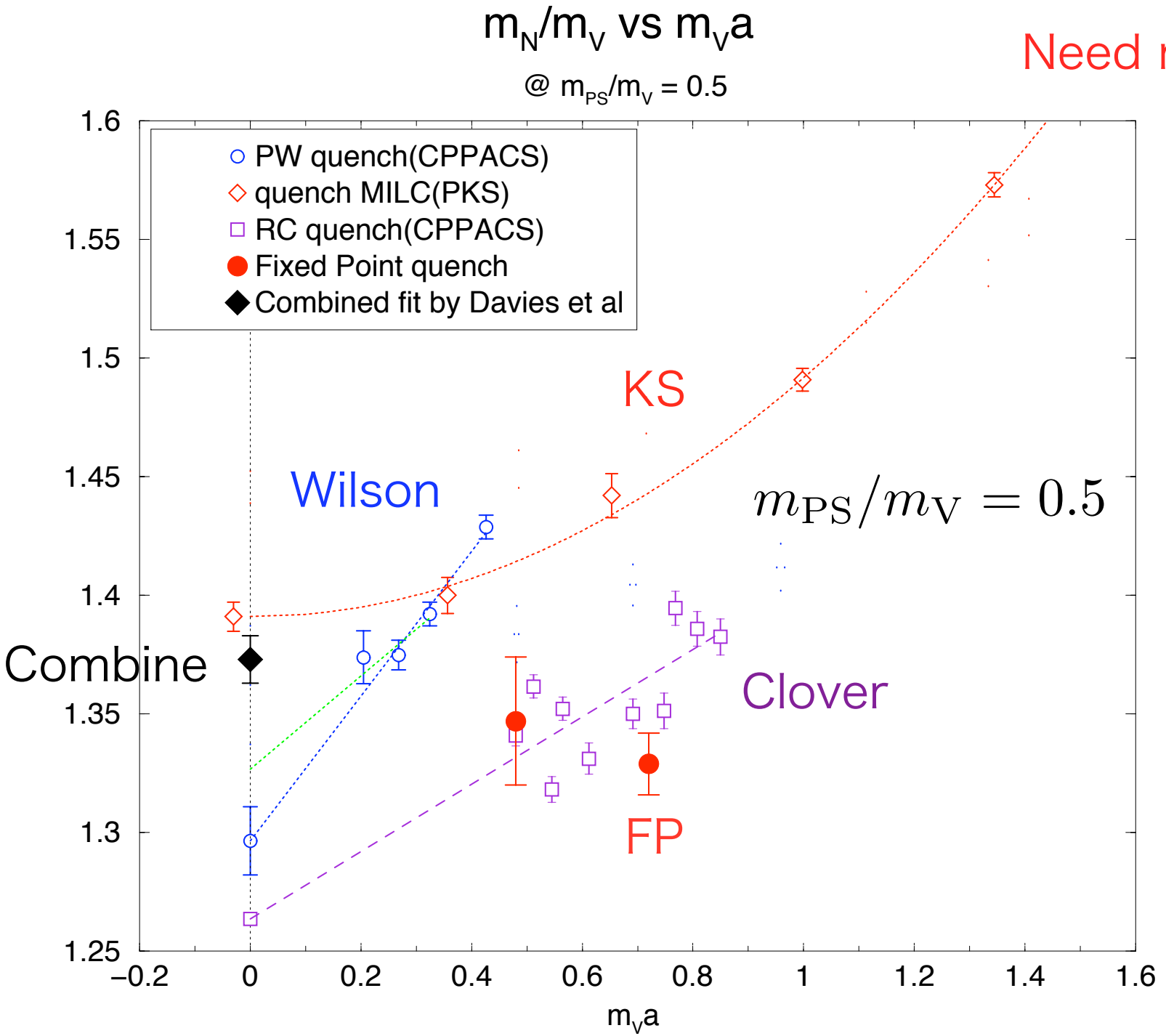
$$m_{\rm PS}/m_{\rm V} = 0.5$$

"all current quark formalism give the same answer for nucleon and rho masses"

Hasenfratz, Juge, Niedermayer (hep-lat/0411034)



S. Aoki (Tsukuba 2004)

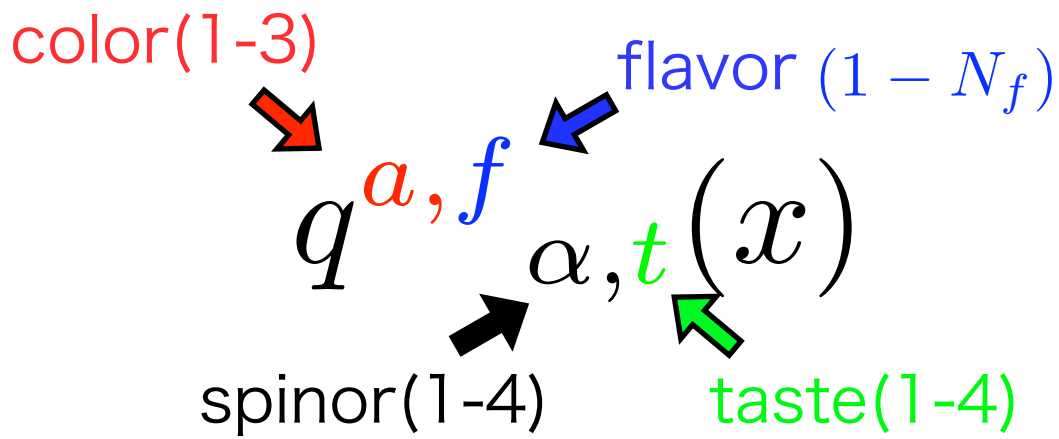


Need more study !

Staggered quarks

1. 4-th root problem ? $(\det D)^{1/4}$

2. Valence problem ?



$$S = \sum_{x,f} \bar{q}^{a,f}_{\alpha,t}(x) \left[D_\mu(\gamma_\mu \otimes 1) + D^2_\mu(\gamma_5 \otimes t_\mu t_5) \right]^{ab}_{\alpha\beta,ts} q^{b,f}_{\beta,s}(x)$$