

Suggestions to the ILDG Metadata Working Group

QCDSF-UKQCD-CSSM Collaboration

ILDG Virtual Hands-on Workshop
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Suggestion 1

- ▶ extend QCDml to include the QCD+QED action with SLiNC fermions [arXiv:1508.06401v2 [hep-lat]]

$$S = S_G + S_A + S_F^u + S_F^d + S_F^s$$

$$S_A = \frac{\beta_{\text{QED}}}{2} \sum_{x, \mu < \nu} (A_\mu(x) + A_\nu(x + \mu) - A_\mu(x + \nu) - A_\nu(x))^2$$

$$\begin{aligned} \tilde{S}_F^q &= \sum_x \left\{ \frac{1}{2} \sum_\mu [\bar{q}(x)(\gamma_\mu - 1)e^{-ie_q A_\mu(x)} \tilde{U}_\mu(x) q(x + \hat{\mu}) \right. \\ &\quad \left. - \bar{q}(x)(\gamma_\mu + 1)e^{ie_q A_\mu(x - \hat{\mu})} \tilde{U}_\mu^\dagger(x - \hat{\mu}) q(x - \hat{\mu})] \right. \\ &\quad \left. + \frac{1}{2\kappa_q} \bar{q}(x) q(x) - \frac{1}{4} c_{\text{SW}} \sum_{\mu\nu} \bar{q}(x) \sigma_{\mu\nu} F_{\mu\nu}(x) q(x) \right\} \end{aligned}$$

Suggestion 1 (cont.)

- ▶ QED parameters

- ▶ β_{QED}

- ▶ electric quark charges $e_q = 2/3, -1/3$

- ▶ \tilde{S}_F^q uses once stout smeared link with $\alpha = 0.1$

$$\begin{aligned}\tilde{U}_\mu &= \exp\{iQ_\mu(x)\} U_\mu(x) \\ Q_\mu(x) &= \frac{\alpha}{2i} \left[VU^\dagger - UV^\dagger - \frac{1}{3}\text{Tr}(VU^\dagger - UV^\dagger) \right]\end{aligned}$$

Suggestion 2

- ▶ include acknowledgements of computer time grants
 - ▶ motivation: computing centres ask for such acknowledgements in scientific publications, it is likely that this will be extended to publications of data