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Erratum

Renormalisation of composite operators in lattice perturbation theory with clover fermions: Non-forward matrix elements

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After a recalculation of matrix elements with clover improved fermions the following errors have to be corrected.

3.1 First moment

The results for representations $\tau_2^{(8)}$ and $\tau_1^{(8)}$ as given in (26) and Table 2 are wrong. The correct values are now

$$\gamma = \begin{cases} 8/3 & \text{for} \quad \tau_3^{(6)}, \tau_1^{(3)}, \tau_4^{(6)}, \tau_4^{(3)}, \\ 3 & \text{for} \quad \tau_2^{(8)}, \tau_1^{(8)}. \end{cases} \tag{26}$$

Table 2. Values for $B(c_{sw})$ for representations of Table 1

Representation	$B(c_{sw})$
$\tau_3^{(6)}$	$1.27959 - 3.87297\, c_{sw} - 0.67826\, c_{sw}^2$
$\tau_1^{(3)}$	$2.56184 - 3.96980\, c_{sw} - 1.03973\, c_{sw}^2$
$\tau_4^{(6)}$	$0.34512 - 1.35931\, c_{sw} - 1.89255\, c_{sw}^2$
$\tau_4^{(3)}$	$0.16738 - 1.24953\, c_{sw} - 1.99804\, c_{sw}^2$
$\tau_2^{(8)}$	$1.25245 - 3.10180\, c_{sw} - 1.59023\, c_{sw}^2$
$\tau_1^{(8)}$	$0.52246 - 2.99849\, c_{sw} - 1.46224\, c_{sw}^2$

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3.2 Second moment

All coefficients of the terms which are linear in c_{sw} have to be multiplied with (-1). Thus $B^{(1,\mathrm{I},\mathrm{II})}$ in (36), (41), (45), (49), (54), (57) and (60) should be replaced by $-B^{(1,\mathrm{I},\mathrm{II})}$, and in (43) and (51) we have $-0.51771 - 0.08325\, c_{sw} - 0.00983\, c_{sw}^2$ and $0.25231 - 0.02507\, c_{sw} + 0.01046\, c_{sw}^2$, respectively.

4 Tadpole improvement

Due to the sign reversal in the linear c_{sw}-terms the numbers for the tadpole improved renormalisation factors of the selected second moments have changed also. For the representation $(\tau_3^{(4)}, C = +1)$ we have now

$$Z = \begin{pmatrix} 1.12965 & -0.00151 \\ 0 & 0.88354 \end{pmatrix}, \tag{72}$$

$$Z^{\mathrm{TI}} = \begin{pmatrix} 1.20501 & -0.00216 \\ 0 & 0.81458 \end{pmatrix}, \tag{73}$$

$$B = \begin{pmatrix} -15.35486 & 0.17889 \\ 0 & 13.79274 \end{pmatrix}, \tag{74}$$

$$B^{\mathrm{TI}} = \begin{pmatrix} -4.06129 & 0.17340 \\ 0 & 5.06434 \end{pmatrix}. \tag{75}$$

For the representation $(\tau_1^{(8)}, C = -1)$ and lattice covariant derivative type I we get

$$Z^{(\mathrm{I})} = \begin{pmatrix} 1.13535 & -0.013727 & -0.00314 & 0.00334 & -0.00021 & -0.00084 \\ 0 & 0.87057 & 0 & 0 & 0 & 0 \\ -0.02823 & 0.06585 & 1.15799 & -0.03036 & -0.00327 & 0.01230 \\ 0 & 0 & 0 & 0.87057 & 0 & 0 \\ 0 & -0.05168 & 0 & 0 & 1.02534 & 0.00239 \\ 0 & -0.05168 & 0 & 0 & 0.00080 & 1.02693 \end{pmatrix}, \tag{76}$$

$$Z^{\mathrm{TI},(\mathrm{I})} = \begin{pmatrix} 1.21508 & -0.01997 & -0.00611 & 0.00512 & -0.00034 & -0.00163 \\ 0 & 0.78680 & 0 & 0 & 0 & 0 \\ -0.05265 & 0.09673 & 1.25616 & -0.04724 & -0.00082 & 0.01094 \\ 0 & 0 & 0 & 0.78680 & 0 & 0 \\ 0 & -0.06100 & 0 & 0 & 1.02195 & 0.00442 \\ 0 & -0.06100 & 0 & 0 & 0.00147 & 1.02490 \end{pmatrix}. \tag{77}$$