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Corrigendum

Corrigendum to "Dual lattice representations for O(N) and CP($N-1$) models with a chemical potential" [Phys. Lett. B 749 (2015) 495–501]

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For the CP($N-1$) model a contribution to the path-integral measure was omitted. The correct form of the corresponding equation reads (in Eqs. (21) and (26) we now use a more compact notation with a product instead of explicitly writing all factors)

$$\int \mathcal{D}[\vec{z}\,] = \prod_x \left(\prod_{j=1}^{N} \int_0^{2\pi} \frac{d\varphi_j(x)}{2\pi} \right) \times \prod_{k=2}^{N} \int_0^{\pi/2} d\theta_k(x) \cos\theta_k(x) \sin(\theta_k(x))^{2k-3}. \tag{21}$$

As a consequence also equation (26) changes to

$$\mathcal{I}_r[\{k^{(j)}, \bar{k}^{(j)}\}] = \prod_x \prod_{k=2}^{N} \int_0^{\pi/2} d\theta_k(x) \cos\theta_k(x)^{1+a_x^{(k)}} \sin\theta_k(x)^{2k-3+\sum_{j=1}^{k-1} a_x^{(j)}}. \tag{26}$$

The first two sentences after Eq. (27) should be replaced by: All the integrals that appear in (26) are related to (11) but now the integration runs only up to $\pi/2$. Thus the result is always given by the first line of (11) with an extra factor of 1/2.

Equations (28), (31) and (33) change to:

$$\mathcal{I}_r[\{k^{(j)}, \bar{k}^{(j)}\}] = \prod_x \frac{\prod_{j=1}^{N} \Gamma\left(\frac{1}{2}\left(2 + a_x^{(j)}\right)\right)}{\Gamma\left(\frac{1}{2}\left(2N + \sum_{j=1}^{N} a_x^{(j)}\right)\right)}. \tag{28}$$

$$Z[U] = \sum_{\{m^{(j)}, \bar{m}^{(j)}\}} \left(\prod_{x,j} \delta\left(\sum_\nu [m_{x,\nu}^{(j)} - m_{x-\hat{\nu},\nu}^{(j)}] \right) \right) \times \left(\prod_{x,\nu,j} \frac{J^{|m_{x,\nu}^{(j)}| + 2\bar{m}_{x,\nu}^{(j)}}}{(|m_{x,\nu}^{(j)}| + \bar{m}_{x,\nu}^{(j)})! \bar{m}_{x,\nu}^{(j)}!} \right) \left(\prod_{x,j} e^{-\mu_j m_{x,d}^{(j)}} \right) \times \left(\prod_x \frac{\prod_{j=1}^{N} \Gamma\left(\frac{1}{2}\left(2 + a_x^{(j)}\right)\right)}{\Gamma\left(\frac{1}{2}\left(2N + \sum_{j=1}^{N} a_x^{(j)}\right)\right)} \right) \left(\prod_{x,\nu} U_\nu(x)^{\sum_j m_{x,\nu}^{(j)}} \right). \tag{31}$$

$$Z = \sum_{\{m^{(j)}, \bar{m}^{(j)}\}} \left(\prod_{x,j} \delta\left(\sum_\nu [m_{x,\nu}^{(j)} - m_{x-\hat{\nu},\nu}^{(j)}] \right) \right) \times \left(\prod_{x,\nu} \delta\left(\sum_j m_{x,\nu}^{(j)} \right) \right) \left(\prod_x e^{-\sum_{j=1}^{N} \mu_j m_{x,d}^{(j)}} \right) \times \left(\prod_{x,\nu,j} \frac{J^{|m_{x,\nu}^{(j)}| + 2\bar{m}_{x,\nu}^{(j)}}}{(|m_{x,\nu}^{(j)}| + \bar{m}_{x,\nu}^{(j)})! \bar{m}_{x,\nu}^{(j)}!} \right) \times \left(\prod_x \frac{\prod_{j=1}^{N} \Gamma\left(\frac{1}{2}\left(2 + a_x^{(j)}\right)\right)}{\Gamma\left(\frac{1}{2}\left(2N + \sum_{j=1}^{N} a_x^{(j)}\right)\right)} \right). \tag{33}$$

The consequence of the correction is that the weights of the unconstrained variables in the dual representation of the CP($N-1$) model change. All other parts of the paper, in particular the physical interpretation of the results, are not affected by these corrections.

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