Published for SISSA by Springer

Received: *October 19, 2021*
Accepted: *October 21, 2021*
Published: *November 5, 2021*

Erratum: Exact summation of leading logs around $T\bar{T}$ deformation of $O(N+1)$-symmetric 2D QFTs

Jonas Linzen,[a] **Maxim V. Polyakov,**[1] **Kirill M. Semenov-Tian-Shansky**[b,c] **and Nika S. Sokolova**[d]

[a] *Ruhr University Bochum, Faculty of Physics and Astronomy, Institute of Theoretical Physics II, D-44780 Bochum, Germany*
[b] *National Research Centre "Kurchatov Institute": Petersburg Nuclear Physics Institute, RU-188300 Gatchina, Russia*
[c] *Higher School of Economics, National Research University, RU-194100 St. Petersburg, Russia*
[d] *Department of Mathematics, King's College London, Strand, London WC2R 2LS, U.K.*

E-mail: Jonas.Linzen@rub.de, cyrstsh@thd.pnpi.spb.ru, nika.sokolova.16@gmail.com

Erratum to: JHEP05(2021)266

ArXiv ePrint: 2104.01038

[1] Deceased.

https://doi.org/10.1007/JHEP11(2021)034

JHEP11(2021)034

In our paper by carelessness we employed the incorrect definition for the constant $1/G$ describing a deviation from the $T\bar{T}$-perturbed theory. The equation (1.5) must read:

$$\frac{1}{G} = 2g_1 + g_2. \tag{1.1}$$

The same misprint occurs in the text in the paragraph below eq. (1.6).

The definition of $1/G$ affects the exertions for the tree-level coefficients $\omega_{1,0}^{0,T}$ listed in eq. (2.8). The first 3 lines of (2.8) must read:

$$\begin{aligned} \omega_{1,0}^{0,T} &= \omega_{1,0}^{0,R} = -4\lambda G + (N+3); \\ \omega_{1,0}^{1,T} &= -\omega_{1,0}^{0,R} = -4\lambda G + 1; \\ \omega_{1,0}^{2,T} &= \omega_{1,0}^{2,R} = -4\lambda G + 3. \end{aligned} \tag{1.2}$$

The tree-level contribution into the isospin-0 transmission amplitude in the leading logarithmic (LL) approximation in (2.16) is altered. The corresponding equation must look as

$$\mathcal{M}^{0,T}(s) = \frac{s}{F^2}(N-1) + s^2\left(-4\lambda + \frac{1}{G}(N+3)\right) + \frac{s^2}{G}\Omega\left(\frac{s}{4\pi G}\ln\left(\frac{\mu^2}{s}\right), \frac{G^2}{sF^2}\right).$$

The tree-level contribution into the LL resummed amplitude for the pure $T\bar{T}$ deformation has to be modified in eq. (4.2) and (4.6). The equation must (4.2) must read as

$$\mathcal{M}(s) = \frac{s\,(N-1)}{F^2} - 4s^2\lambda + \frac{s\,(N-1)}{F^2}\Omega^{T\bar{T}}\left(\frac{1}{4\pi F^2}\ln\left(\frac{\mu^2}{s}\right)\right); \tag{1.3}$$

respectively the eq. (4.6) takes the form

$$\mathcal{M}(s) = -4s^2\lambda + \frac{s}{F^2}(N-1)\left(\frac{1}{1 - \frac{(N-2)}{4\pi F^2}\ln\left(\frac{\mu^2}{s}\right)}\right) = -4s^2\,\lambda + \frac{s}{F^2(s)}(N-1).$$

A similar modification is also to be performed in eq. (4.18). It must read as

$$\begin{aligned} \mathcal{M}(s) = {}& -4s^2\,\lambda + \frac{s}{F^2}(N-1)\left(\frac{1}{1 - \frac{(N-2)}{4\pi F^2}\ln\left(\frac{\mu^2}{s}\right)}\right) \\ &+ \frac{s^2}{G}\left[(N+3) + \frac{(N-1)(N+2)}{N}\left(\frac{1}{\left[1 - \frac{(N-2)}{4\pi F^2}\ln\left(\frac{\mu^2}{s}\right)\right]^{\frac{2N}{N+2}}} - 1\right)\right] + O\left(\frac{1}{G^2}\right). \end{aligned} \tag{1.4}$$

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Finally, the expressions for the transmission and reflection leading log amplitudes for all isospin channels (B.1) must read as:

$$
\begin{aligned}
\mathcal{M}^{I=0,T}(s) &= \frac{s}{F^2}(N-1)-4s^2\lambda+\frac{s^2}{G}(N+3)+\frac{s^2}{G}\;\Omega\left(\frac{s}{4\pi G}\ln\left(\frac{\mu^2}{s}\right),\frac{G}{sF^2}\right);\\
\mathcal{M}^{I=1,T}(s) &= \frac{s}{F^2}-4s^2\lambda+\frac{s^2}{G}-\frac{s^2}{(N-1)G}\;\Omega\left(-\frac{s}{4\pi G}\ln\left(\frac{\mu^2}{s}\right),-\frac{G}{sF^2}\right);\\
\mathcal{M}^{I=2,T}(s) &= -\frac{s}{F^2}-4s^2\lambda+\frac{3s^2}{G}\\
&\quad -\frac{2s^2}{(N+2)(N-1)G}\left[\Omega\left(\frac{s}{4\pi G}\ln\left(\frac{\mu^2}{s}\right),\frac{G}{sF^2}\right)-\frac{N}{2}\Omega\left(-\frac{s}{4\pi G}\ln\left(\frac{\mu^2}{s}\right),-\frac{G}{sF^2}\right)\right];\\
\mathcal{M}^{I,R}(s) &= (-1)^I\;\mathcal{M}^{I,T}(s).
\end{aligned}
\tag{1.5}
$$

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