

The classical limit for the Holstein-Primakoff representation in the soliton theory of Heisenberg chains

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CORRIGENDUM

The classical limit for the Holstein–Primakoff representation in the soliton theory of Heisenberg chains by Mario J Škrinjar, Darko V Kapor and Stanoje D Stojanović
(*J. Phys.: Condens. Matter* 1989 1 725–732)

Expressions (13), (15), (16), (31) and (33) should be corrected to read as follows:

$$\begin{aligned}
 iS_c \tilde{\alpha}_t = & h_2 \tilde{\alpha} - 2\tau \tilde{J} |\tilde{\alpha}|^2 \tilde{\alpha} - \tilde{J} a^2 \tilde{\alpha}_{xx} - \frac{1}{2} \tilde{J} a^2 (2\tilde{\alpha} |\tilde{\alpha}_x|^2 + \tilde{\alpha}^2 \tilde{\alpha}_{xx}^* - \tilde{\alpha}^* \tilde{\alpha}_x^2) \\
 & - \frac{1}{16} \tilde{J}^2 \{ \tilde{\alpha} (|\tilde{\alpha}|_x^2)^2 / (1 - \frac{1}{2} |\tilde{\alpha}|^2)^2 + [2 |\tilde{\alpha}|^2 \tilde{\alpha} / (1 - \frac{1}{2} |\tilde{\alpha}|^2)^2] |\tilde{\alpha}|_{xx}^2 \} \\
 & - \tau \tilde{J} a^2 (2\tilde{\alpha} |\tilde{\alpha}_x|^2 + \tilde{\alpha}^2 \tilde{\alpha}_{xx}^* + |\tilde{\alpha}|^2 \tilde{\alpha}_{xx}). \tag{13}
 \end{aligned}$$

$$S_c A_t = \tilde{J} a^2 (-2A_x \varphi_x - A \varphi_{xx} + 2A^2 A_x \varphi_x + \frac{1}{2} A^3 \varphi_{xx}). \tag{15}$$

$$\begin{aligned}
 (-S_c \varphi_t - S_c \Omega) A = & h_2 A - 2\tau \tilde{J} A^3 - \tilde{J} a^2 A_{xx} + \tilde{J} a^2 A \varphi_x^2 - \tilde{J} a^2 A^3 \varphi_x^2 \\
 & - \frac{1}{2} \tilde{J} a^2 (1 + 4\tau) (A A_x^2 + A^2 A_{xx}) - \frac{1}{8} \tilde{J} a^2 [(4A^3 A_x^2 + 2A^4 A_{xx}) / (1 - \frac{1}{2} A^2) \\
 & + A^5 A_x^2 / (1 - \frac{1}{2} A^2)^2]. \tag{16}
 \end{aligned}$$

$$E = \mu M f + (16 S_c \tilde{J} / M) \sin(Pa / 4 S_c) \tag{31}$$

$$\begin{aligned}
 A_{\frac{2}{5}} = & [(\gamma_0 + 2\tau/a^2 - V^2/4) A^2 - (\frac{1}{2} \gamma_0 + 2\tau/a^2) A^4 \\
 & + (\tau/2a^2) A^6] [1 + 2\tau A^2 (1 - \frac{1}{2} A^2)]^{-1} \\
 \simeq & (\gamma_0 + 2\tau/a^2 - V^2/4) A^2 - [(\frac{1}{2} \gamma_0 + 2\tau/a^2) A^4 \\
 & - (\tau/2a^2) A^6] [1 + O(\tau)] + O(\tau^2 A^8) \\
 \simeq & (\gamma_0 + 2\tau/a^2 - V^2/4) A^2 - (\frac{1}{2} \gamma_0 + 2\tau/a^2) A^4 + (\tau/2a^2) A^6. \tag{33}
 \end{aligned}$$