Erratum

A Finite Sum Representation of the Angular Momentum Projection Operator

P. Chattopadhyay

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The right hand sides of Eqs. (2.12), (2.17) and (3.2) should be multiplied by $\frac{1}{(2M+1)^3}$, $\frac{1}{(M+1)^2(2M+1)}$ and $\frac{1}{(2M+1)}$ respectively. Similarly a factor of $\frac{1}{(M+1)}$ is missing from the r.h.s. of Eqs. (3.6) and (3.10). In Eq. (2.17) the factor $e^{-i\beta_0 l J_y}$ should be replaced by $e^{-i\beta_0 l J_y}$ and the expression of $A_{KK'}^{nl n'}(J, \beta_0)$ appropriately modified.

In (A.9) the phase factor is $(-1)^{K-K'}$ instead of $(-i)^{K-K'}$. The power of $(\cos \frac{1}{2}\beta)$ in (A.15) is $(K+K')$. The part between (A.10) and (A.14) in the Appendix should read as follows:

The integrals are different depending on whether $(l-m)$ is odd or even. Denoting by $I_{KK'}^0(J, m)$ and $I_{KK'}^E(J, m)$ the parts of the sum such that $(l-m)$ is odd and even respectively one has

$$\begin{aligned}
 I_{KK'}^0(J, m) &= \sum_{l=0}^J \frac{(-i)^{K-K'} d_{lK'}^J(\frac{1}{2}\pi) d_{lK}^J(\frac{1}{2}\pi)}{2i} \\
 &[\delta_{l, m-1} - \delta_{l, m+1}] \pi \\
 &= \frac{\pi}{2i} (-i)^{K-K'} [d_{m-1, K'}^J(\frac{1}{2}\pi) d_{m-1, K}^J(\frac{1}{2}\pi) \\
 &- d_{m+1, K'}^J(\frac{1}{2}\pi) d_{m+1, K}^J(\frac{1}{2}\pi)]. \quad (\text{A.11})
 \end{aligned}$$

and

$$I_{KK'}^E(J, m) = -2(-i)^{K-K'} \sum_{l=0}^J \frac{d_{lK'}^J(\frac{1}{2}\pi) d_{lK}^J(\frac{1}{2}\pi)}{(l-m)^2 - 1} \quad (\text{A.12})$$

where $\sum'$ and $\sum''$ indicate the appropriate restrictions on the summation. One can show that the real part of $I_{KK'}(J, m)$

$$I_{KK'}^R(J, m) = 0 \quad |m| < (J - K_1) \quad (\text{A.13})$$

where K_1 is the greater of K and K' . Thus since the d -functions are real it follows from (A.1) that

$$I_{KK'}^R(J, m) = \int_{-1}^{+1} d(\cos \beta) d_{KK'}^J(\beta) \cos m\beta \quad (\text{A.14})$$

P. Chattopadhyay
Institut für Theoretische Physik
Universität Frankfurt/Main
Robert-Mayer-Straße 8-10
D-6000 Frankfurt/Main 1
Federal Republic of Germany