ERRATA

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SPECTRUM OF A HYDROGEN ATOM IN AN INTENSE MAGNETIC FIELD

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In Sec. 5 the study of the Hamiltonian (1.1) is reduced to the analysis of perturbations in $l^2 \oplus L^2([0, 1]; p dp)$ whose matrix elements with respect to the l^2 part are given to leading order by

$$\rho \begin{pmatrix} a(jk)^{-\frac{3}{2}} & a^{\frac{1}{2}}k^{-\frac{3}{2}} \\ a^{\frac{1}{2}}j^{-\frac{3}{2}} & 1 \end{pmatrix}.$$

At the bottom of page 740 it is indicated that it follows from Lemmas 5.2 and 5.3 and Eqs. (5.12) and (5.13) that $a = 1$. In fact the correct choice is $a = \frac{1}{2}$ (note the $2^{-\frac{1}{2}}$ in (5.12)). For general a the crucial quantity (5.19) is estimated by Lemma 5.4. In the borderline case $\eta = 0$ one has

$$\rho \left(a \sum_{j \neq k} \frac{j^{-3}}{\varepsilon_j - \varepsilon(\delta)} + 2 \int_0^1 \frac{p}{\varepsilon(p) - \varepsilon(\delta)} dp \right) = \rho((-4a + 2) \ln(k + 1) + \mathcal{O}(1)).$$

In the case $a = \frac{1}{2}$ this quantity is $\mathcal{O}(\rho)$ for all k .

This cancellation does not significantly change or simplify the analysis. It has some consequences for Sec. 7. In Lemma 7.1 condition (vii) should be replaced by

$$|\kappa_j - 2^{-\frac{1}{2}} \sqrt{\rho} j^{-\frac{3}{2}}| \leq \text{const } \sqrt{\rho} j^{-\frac{3}{2} - \frac{1}{2}}.$$

As a consequence the numbers q_k in part (b) of Theorem 7.2 satisfy

$$|q_k + \frac{1}{\rho}| \leq \text{const}$$

and the vector $\kappa^{(0)}$ from part (c) should be chosen to be

$$\kappa^{(0)} = \begin{pmatrix} 2^{-\frac{1}{2}} j^{-\frac{3}{2}} \\ 0 \end{pmatrix}.$$

Further, throughout Sec. 7 all factors of $2 \ln(k)$ or $2\rho \ln(k)$ should be set to 0.

This cancellation of the logarithmic factor does, however, simplify the results quoted on pages 704 through 707. In part (d) the quantity $q_k^{(-)}$ now satisfies

$$\left| q_k^{(-)} + \frac{1}{\rho^{(-)}(\lambda)} \right| \leq \text{const}$$

and the correct L^2 estimate is

$$\|\tilde{\mathcal{V}}^{(0,-,k)} - \psi_k\| \leq \text{const } \rho.$$

In part (f) the quantity $q_k^{(+)}$ now satisfies

$$\left| q_k^{(+)} - 2 \ln(k) \right| \leq \text{const}$$

and the correct L^2 estimate is

$$\|\tilde{\mathcal{V}}^{(0,+,k)} - \psi_k\| \leq \text{const } \rho.$$

Expanding the results of parts (d) and (f) to leading order one now finds that the behavior given in parts (c) and (e) hold for all k . However, for large k parts (d) and (f) give a sharper estimate.

Finally, in part (c) of the results quoted on pages 704 through 707

$$\left| \alpha_k^{(-)} - \lambda^2 \ln \left(\frac{1}{\lambda} \right) \right| \leq \text{const } \lambda^2$$

should read

$$\left| \alpha_k^{(-)} - \frac{|m|+1}{4} \lambda^2 \ln \left(\frac{1}{\lambda} \right) \right| \leq \text{const } \lambda^2.$$