

Corrections to "Asymptotic and universal spectral estimates  
with applications in many-body quantum mechanics  
and spectral shape optimization"

**Part I: Introduction and summary**

Chapter 1: Introduction

Chapter 2: Background

Chapter 3: Spectral shape optimization

Chapter 4: Mathematical aspects of quantum mechanics

Chapter 5: Summary of results

**Part II: Scientific papers**

Paper A

Paper B

- Corollary 1.2: Replace  $C(n_1, \sigma + n_2/2)$  by  $C(\sigma + n_2/2, n_1)$ .
- p. 2172: The inequality  $\rho(x) > 1/2$  need not be strict. Correspondingly three inequalities in the proof of Corollary 2.3 should be non-strict.

Paper C

- p. 14: The  $a_2, \dots, a_n$  need to be chosen large enough, it suffices to choose  $a_2 = \dots = a_n = 2D(\Omega)$ .
- p. 18: The assumption  $\Lambda > \inf\{\lambda_1(\Omega) : \Omega \in \mathcal{A}, |\Omega| = 1\}$  should be changed to  $\Lambda > \lambda_1(\Omega_0)$ .
- p. 26: In the next-to-last paragraph the three occurrences of  $\Omega$  should be replaced by  $\Omega(\varepsilon)$ .
- p. 27: In the first sentence two  $\partial\Omega$  should be replaced by  $\partial\Omega(\varepsilon)$ , and again on the line following equation (38).
- p. 30: In the first paragraph, the assumption  $l_0 \leq r_{in}(\Omega)$  is needed also to conclude that  $x_0, x_1, x_2$  cannot lie on a line.

Paper D

Paper E

Paper F

Paper G

- p. 313: Both convolutions should be evaluated at  $\mathbf{x}$  and  $\frac{(\mathbf{x}-\cdot)^+}{|\mathbf{x}-\cdot|^2}$  should be replaced by  $\frac{(\cdot)^+}{|\cdot|^2}$ .
- p. 338: In the next-to-last paragraph  $(z_k^+, z_k^-)$  and  $(z_{k+1}^+, z_{k+1}^-)$  should be replaced by  $(z_k^-, z_k^+)$  and  $(z_{k+1}^-, z_{k+1}^+)$ , respectively.
- p. 338: In the next-to-last paragraph that  $m = 2$  is incorrect. However,  $z_{k+1}^+ - z_k^- > \frac{R}{2}$  and  $|I_k| < CR$  implies  $z_{k+1}^- - z_k^+ > (\frac{1}{2} - 2C)R$ , and hence  $|J \cap (\cup_{k=1}^m I_k)| \leq |J| - |z_k^+ - z_{k+1}^-| \leq 2CR$  as claimed.

Paper H