Canad. J. Math. Vol. **53** (4), 2001 pp. 756–757

Correction to: Upper Bounds for the Resonance Counting Function of Schrödinger Operators in Odd Dimensions

Richard Froese

Abstract. The proof of Lemma 3.4 in [F] relies on the incorrect equality $\mu_j(AB) = \mu_j(BA)$ for singular values (for a counterexample, see [S, p. 4]). Thus, Theorem 3.1 as stated has not been proven. However, with minor changes, we can obtain a bound for the counting function in terms of the growth of the Fourier transform of $|V|$.

Here is the corrected version of Theorem 3.1.

Theorem *Suppose that V is a super-exponentially decaying potential with*

$$\widehat{|V|}(z) \le Ce^{\Phi(|z|)}$$

for a positive, increasing function Φ. Then

$$n(r) \le C\Phi^n(cr) + O\big(\Phi^{n-1}(cr)\big)$$

for some constants c and C.

These are the changes needed to prove the bound for $|\phi(k)|$ in Lemma 3.4. Using $\det(1 + AB) = \det(1 + BA)$ and Fan's inequality $\mu_{n+m+1}(AB) \le \mu_{n+1}(A)\mu_{m+1}(B)$ (see [S]) we arrive at

$$\mu_j\big(T(k)\big) \le C|k|^{n-2}\mu_{[(j+1)/2]}\big(F_V^T(-k)\big)\,\mu_{[(j+1)/2]}\big(F_{|V|}(-k)\big)$$

where $[\cdot]$ denotes the integer part. Now

$$\mu_{[(j+1)/2]}\big(F_{|V|}(-k)\big) = (\mu_{[(j+1)/2]}\mathbf{V}_k)^{1/2}$$

where this time $\mathbf{V}_k$ is the integral operator with integral kernel $\widehat{|V|}(\bar{k}\omega - k\omega')$. We then obtain the bound

$$\mu_{[(j+1)/2]}\big(F_{|V|}(-k)\big) \le Ce^{\frac{1}{2}\big(\Phi-\delta[(j+1)/2]^{(1/(n-1))}\big)}$$

and the same bound for $\mu_{[(j+1)/2]}\big(F_V^T(-k)\big)$. This leads to

$$\mu_j\big(T(k)\big) \le Ce^{\Phi-\delta' j^{1/(n-1)}}$$

where $\Phi = \Phi\big((2+\epsilon)|k|\big)$ for some $\epsilon > 0$ and $\delta' = \delta 2^{-1/(n-1)}$. The rest of the proof is identical.

Acknowledgement The author thanks Barry Simon for pointing out this error.

Received by the editors January 20, 2001.
AMS subject classification: Primary: 47A10, 47A40; secondary: 81U05.

References

[F] Richard Froese, *Upper bounds for the resonance counting function of Schrödinger operators in odd dimensions.* Canad. J. Math. **50**(1998), 538–546.

[S] Barry Simon, *Trace Ideals and their Applications*. London Math. Soc. Lecture Note Ser. **35**, Cambridge University Press, Cambridge, 1979.

Department of Mathematics
University of British Columbia
Vancouver, BC
V6T 1Z2