wishes to learn some quantum mechanics [**3, 4**]. The book serves neither purpose; rather, it seems to be for the mathematician who wishes to study Schrödinger operators for their own sake. But in this regard the book is more introductory, not nearly so penetrating as other works on the subject, for example the books of Simon [**5, 6**], Glimm and Jaffe [**7**], and especially the highly readable, comprehensive treatises of Reed and Simon [**8**]. The author has been parsimonious with references, particularly in the text, which could frustrate the reader who wishes to pursue the literature further.

Quantum mechanics is a little like its contemporary, Stravinsky's music—very much a part of the standard repertoire and still very revolutionary. The book comes down on the side of repertoire—functional analysis, subheading Schrödinger operators. My guess is that most readers would want a larger perspective, a glimpse of where these operators come from, and why the subject is still provocative.

References

1. J. von Neumann, *Mathematical foundations of quantum mechanics*, Princeton Univ. Press, Princeton, N. J., 1955.

2. P. A. M. Dirac, *The principles of quantum mechanics*, 4th ed., Oxford Univ. Press, Oxford, 1958.

3. W. O. Amrein, J. M. Jauch and K. S. Sinha, *Scattering theory in quantum mechanics*, Benjamin, Reading, Mass., 1977.

4. W. O. Amrein, *Non-relativistic quantum dynamics*, Math. Physics Stud., Vol. 2, Reidel, Dordrecht, Holland, 1981.

5. B. Simon, *Quantum mechanics for Hamiltonians defined as quadratic forms*, Princeton Univ. Press, Princeton, N. J., 1971.

6. ______, *Functional integration and quantum physics*, Academic Press, New York, 1979.

7. J. Glimm and A. Jaffe, *Quantum physics*, Springer-Verlag, New York, 1981.

8. M. Reed and B. Simon, *Methods of modern mathematical physics*, Vols. I–IV, Academic Press, New York, 1972–1978.

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Hyperbolic boundary value problems, by Reiko Sakamoto, Cambridge Univ. Press, New York, New York, 1982, viii + 210 pp., $34.50. ISBN 0-5212-3568-5

From its beginning with the study of the vibrations of a stretched string in the eighteenth century, the theory of hyperbolic differential equations has always stood a little apart from the general theory of linear partial differential equations. This was evident in d'Alembert's famous solution formula, in which the wave forms appear explicitly as real function values in such a way as to make natural the ideas of characteristic lines, domains of dependence, and regions of influence. These motifs have carried though the times of Riemann, Goursat, and Hadamard, whose monograph on Cauchy's Problem (the initial