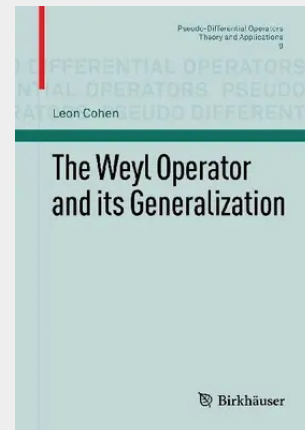


The Weyl Operator and its Generalization

The discovery of quantum mechanics in the years 1925-1930 necessitated the consideration of associating ordinary functions with non-commuting operators. Methods were proposed by Born/Jordan, Kirkwood, and Weyl. Sometime later, Moyal saw the connection between the Weyl rule and the Wigner distribution, which had been proposed by Wigner in 1932 as a way of doing quantum statistical mechanics. The basic idea of associating functions with operators has since been generalized and developed to a high degree. It has found several application fields, including quantum mechanics, pseudo-differential operators, time-frequency analysis, quantum optics, wave propagation, differential equations, image processing, radar, and sonar.

This book aims at bringing together the results from the above mentioned fields in a unified manner and showing the reader how the methods have been applied. A wide audience is addressed, particularly students and researchers who want to obtain an up-to-date working knowledge of the field. The mathematics is accessible to the uninitiated reader and is presented in a straightforward manner.

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