

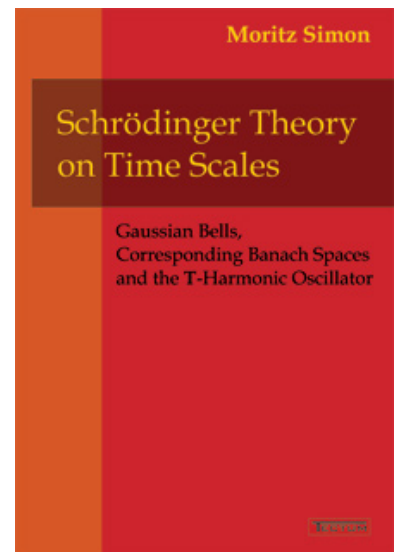
Moritz Simon

## Schrödinger Theory on Time Scales

### Gaussian Bells, Corresponding Banach Spaces and the T-Harmonic Oscillator

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This book gives a fundamental introduction to the theory of time scales, a generalization and extension of the theories of differential and difference equations to arbitrary closed subsets of the real numbers. For a better understanding it is desirable that the reader be familiar both with continuous and discrete analysis. However, it should be enough to know about the basics of calculus. The text demonstrates how the time scale approach can be used to model important scenarios in discrete Schrödinger theory, known as the fundamental branch of quantum mechanics. The main topics are: Gaussian bells on time scales, Corresponding Banach spaces, Harmonic oscillator interactions. Throughout the text, the known results from the continuous differential theory are first introduced, then extended to the time scales point-of-view. An outstanding role is played by the so-called unitary lattices, which are characterized by a constant growth of graininess. The book is mainly written for scientists interested in discrete analysis, including quite a few recent research results. But also graduate students majoring in (functional) analysis may find it relevant and accessible. The text originated from the author's diploma thesis.



ISBN: 978-3-8288-8821-0

103 Seiten, Paperback

Tectum Verlag 2005

**Preis 24,90 €**