A developmental research on introducing the quantum mechanics formalism at university level

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A developmental research on introducing the quantum mechanics formalism at university level

Lodewijk Koopman
The front cover shows the diamond factory (diamantslijperij) on the Nieuwe Achtergracht in Amsterdam. In this building I have followed my first courses on quantum mechanics. Until 2000 the AMSTEL Institute was housed at the two top floors. The diamond factory is being renovated to house CREA, the cultural organization of the University of Amsterdam. In the background the Van ’t Hoff building is visible, named after Nobel prize laureate J.H. van ’t Hoff. The Quantum Chemistry course, subject in this research, was given in this building.

The images in the right-hand corner of the odd pages form a flipbook animation when the pages are turned rapidly. The images were taken from the film discussed in Tonomura et al. (1989). Am. J. Phys., 57 (2), 117–120. The film shows the double slit interference pattern build-up of single electrons and was used in this research (Chapter 7). With kind permission of dr. A. Tonomura.
A DEVELOPMENTAL RESEARCH ON
INTRODUCING THE QUANTUM MECHANICS
FORMALISM AT UNIVERSITY LEVEL

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad van doctor

aan de Universiteit van Amsterdam

op gezag van de Rector Magnificus

prof. dr. D.C. van den Boom

ten overstaan van een door het college voor promoties ingestelde

commissie, in het openbaar te verdedigen in de Agnietenkapel

op dinsdag 17 mei 2011, te 12:00 uur

door

Lodewijk Koopman

geboren te Alphen aan den Rijn
Promotiecommissie

Promotor: prof. dr. A.L. Ellermeijer
Copromotor: dr. W.H. Kaper

Overige leden: dr. H.J.M. van Bemmel
prof. dr. H.M.C. Eijkelhof
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prof. dr. P.J.G. Mulders
prof. dr. C.J.M. Schoutens
prof. dr. Ch.G. van Weert
prof. dr. D.A. Zollman

Faculteit der Natuurwetenschappen, Wiskunde en Informatica
Voor mijn zonen Levi en Elias,
voor wie er nog zo veel moois te leren is