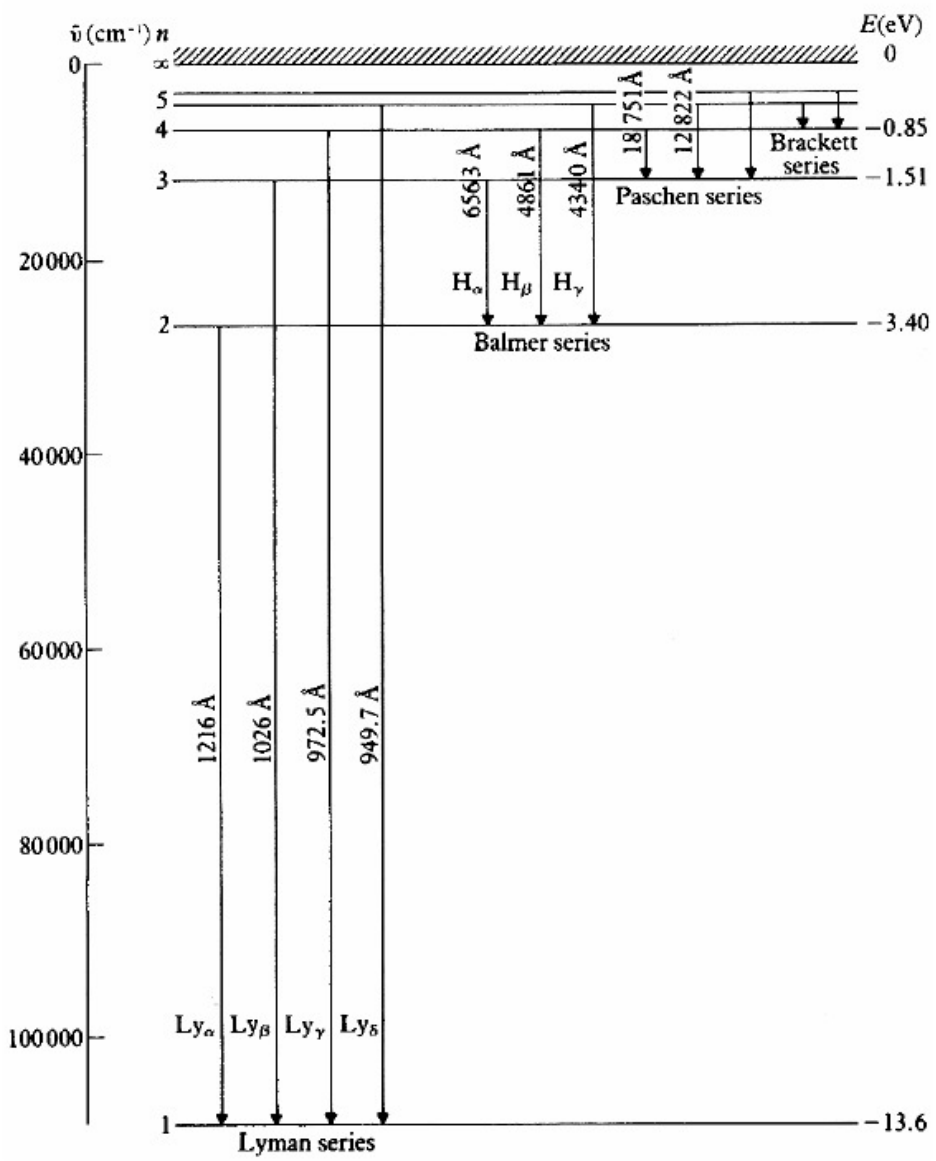
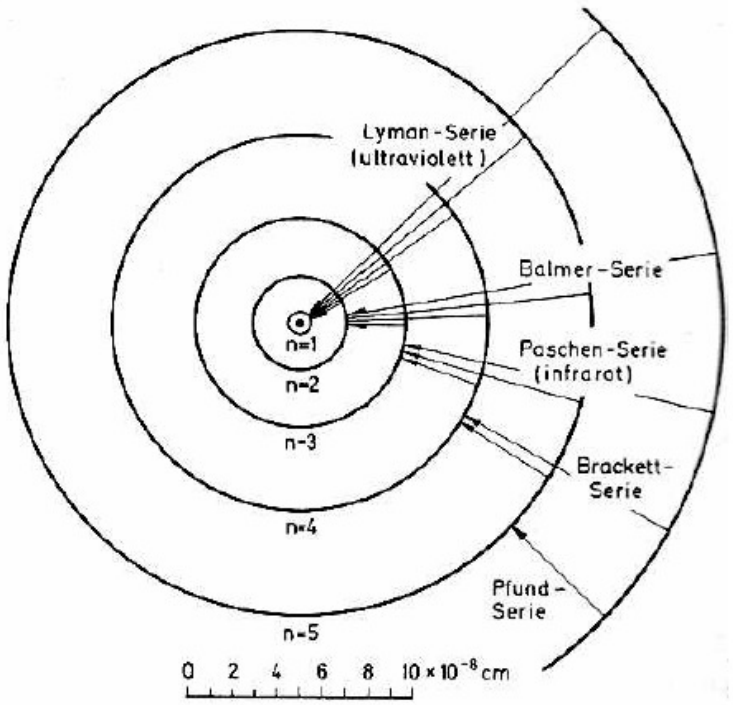
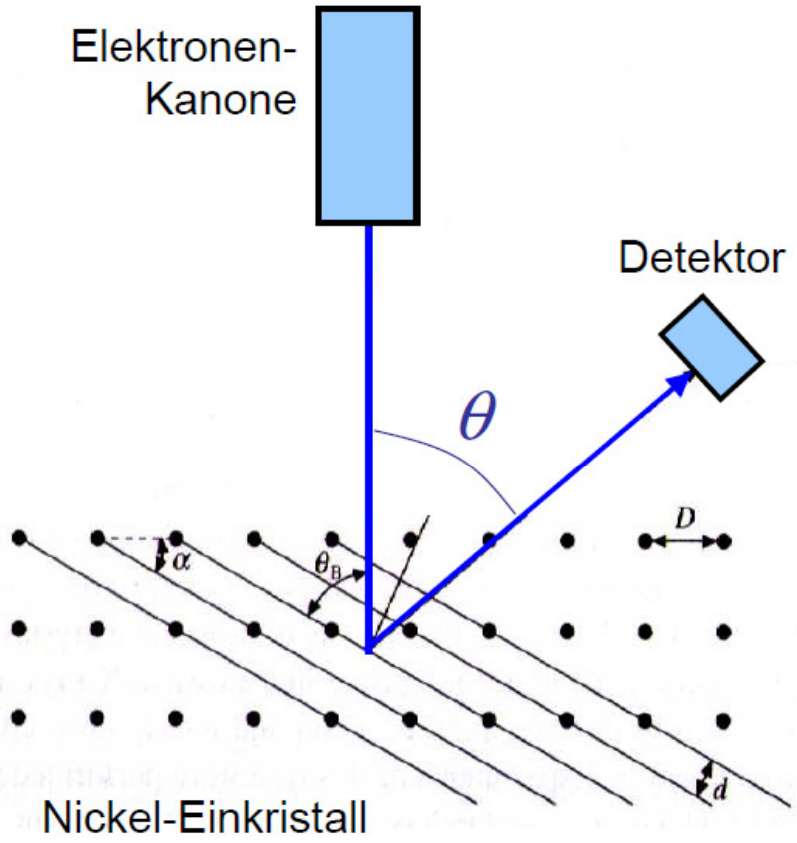
Bohrsches Atommodell

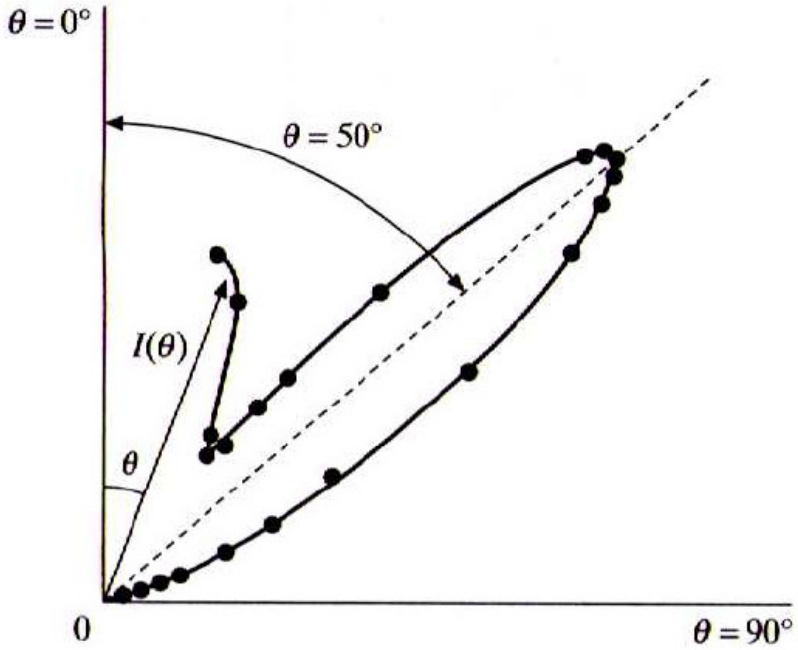




Quelle: B.H. Bransden et al., Physics of Atoms & Molecules, Prentice Hall, 2003

Davisson-Germer-Experiment



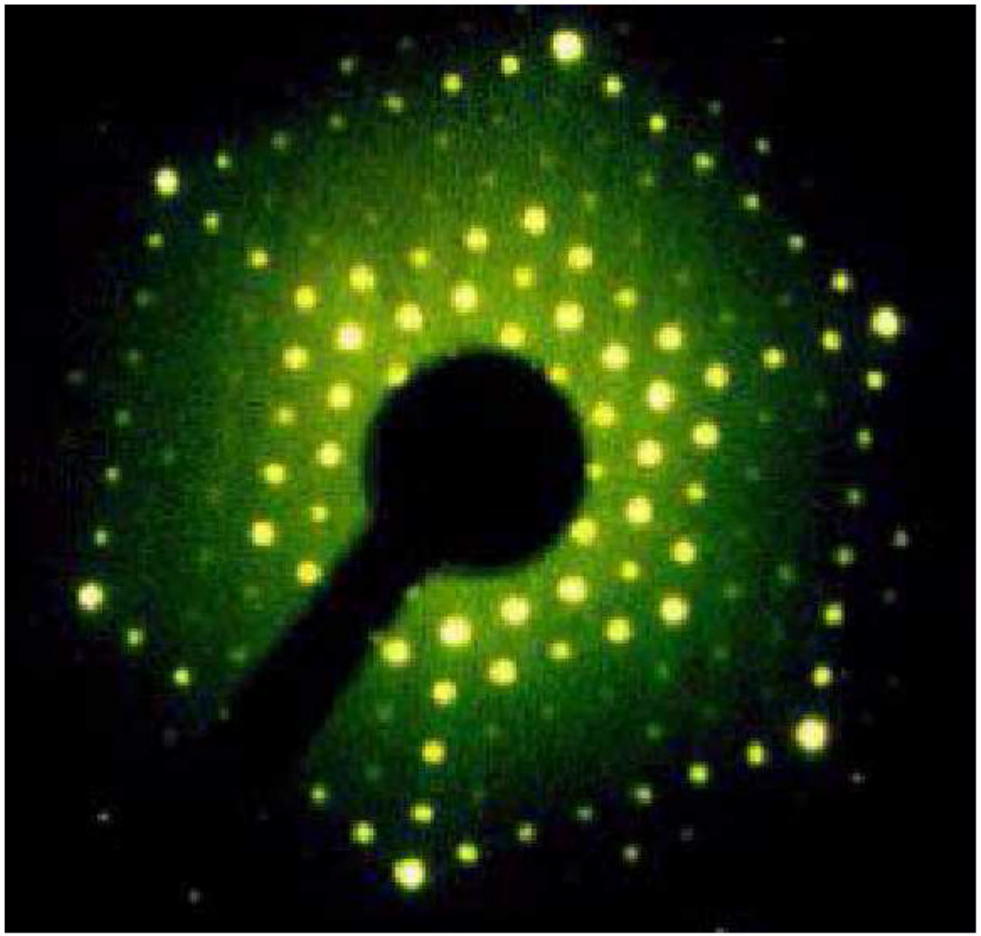


Bragg-Beugung:

$n\lambda = D \sin\theta$

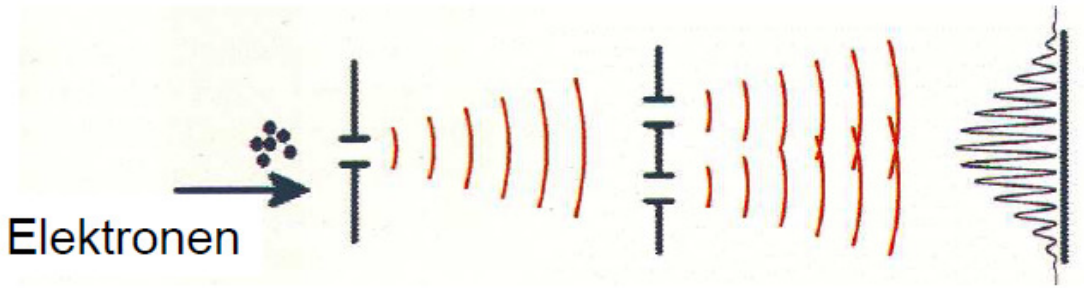
Quelle: B.H. Bransden et al., Prentice Hall, London (2003)

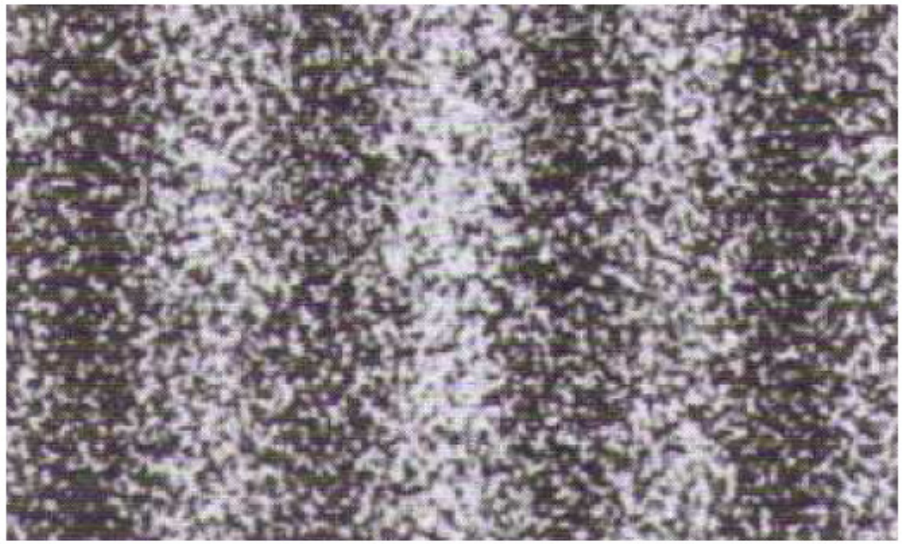
Beugung von Elektronen am Einkristall



LEED- (Low Energy Electron Diffraction)
Beugungsbild von Elektronen an Silizium

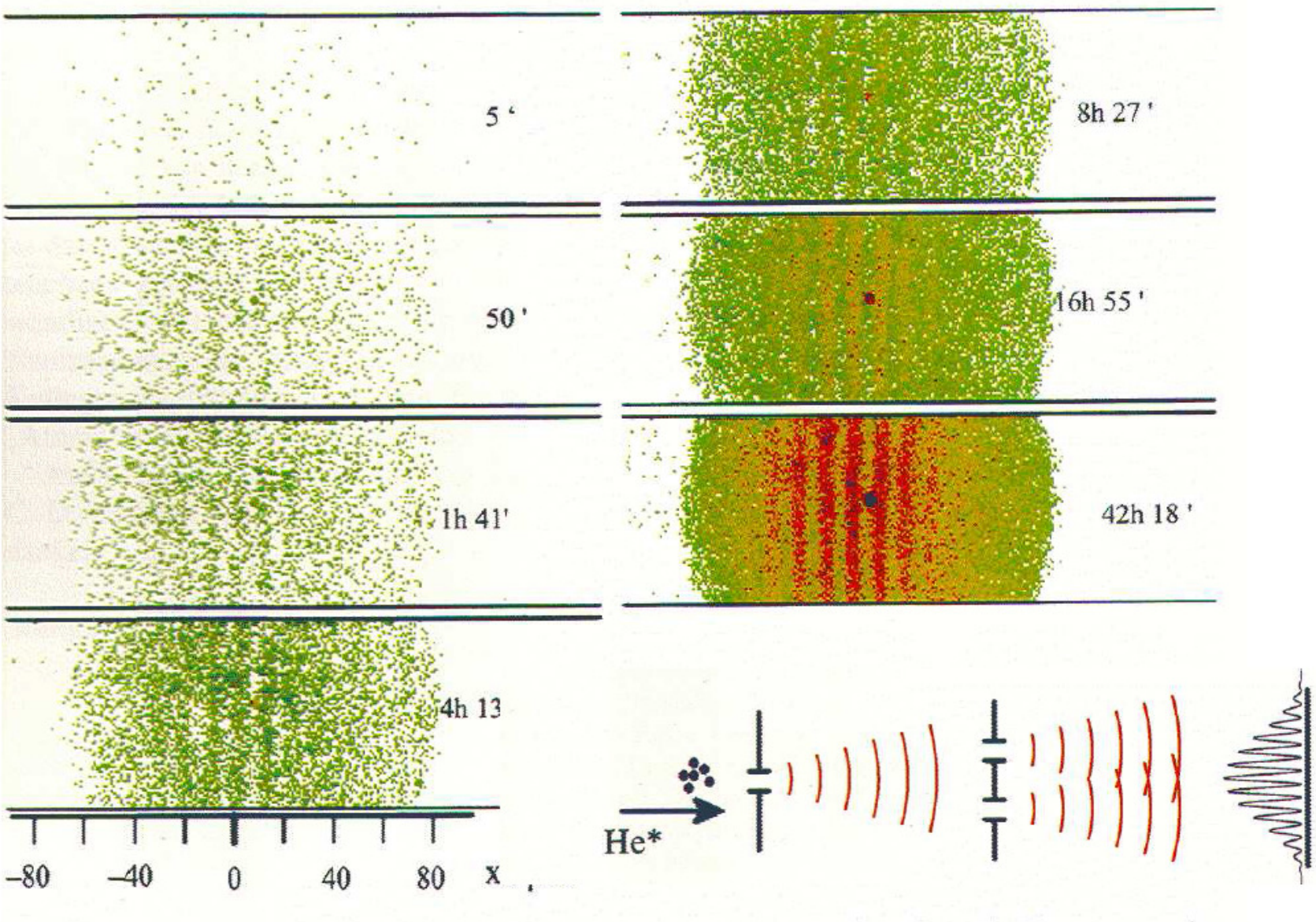
Beugung von Elektronen am Doppelspalt





A. Tonomura et al., American Journal of Physics **57**, 117 (1989)

Beugung von Heliumatomen am Doppelspalt



C. Kurtsiefer, T. Pfau, J. Mlynek, Nature 386, 150 (1997)

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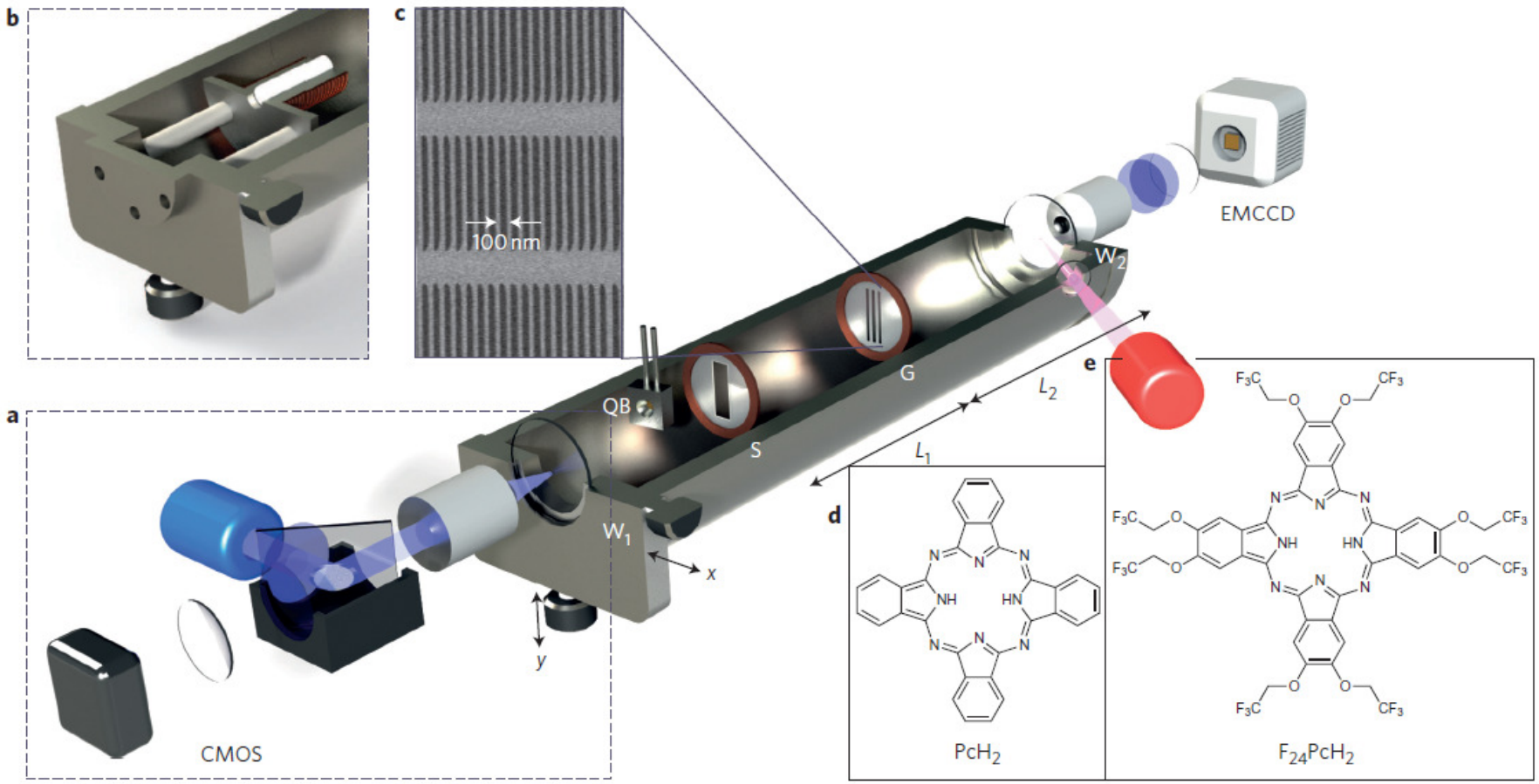
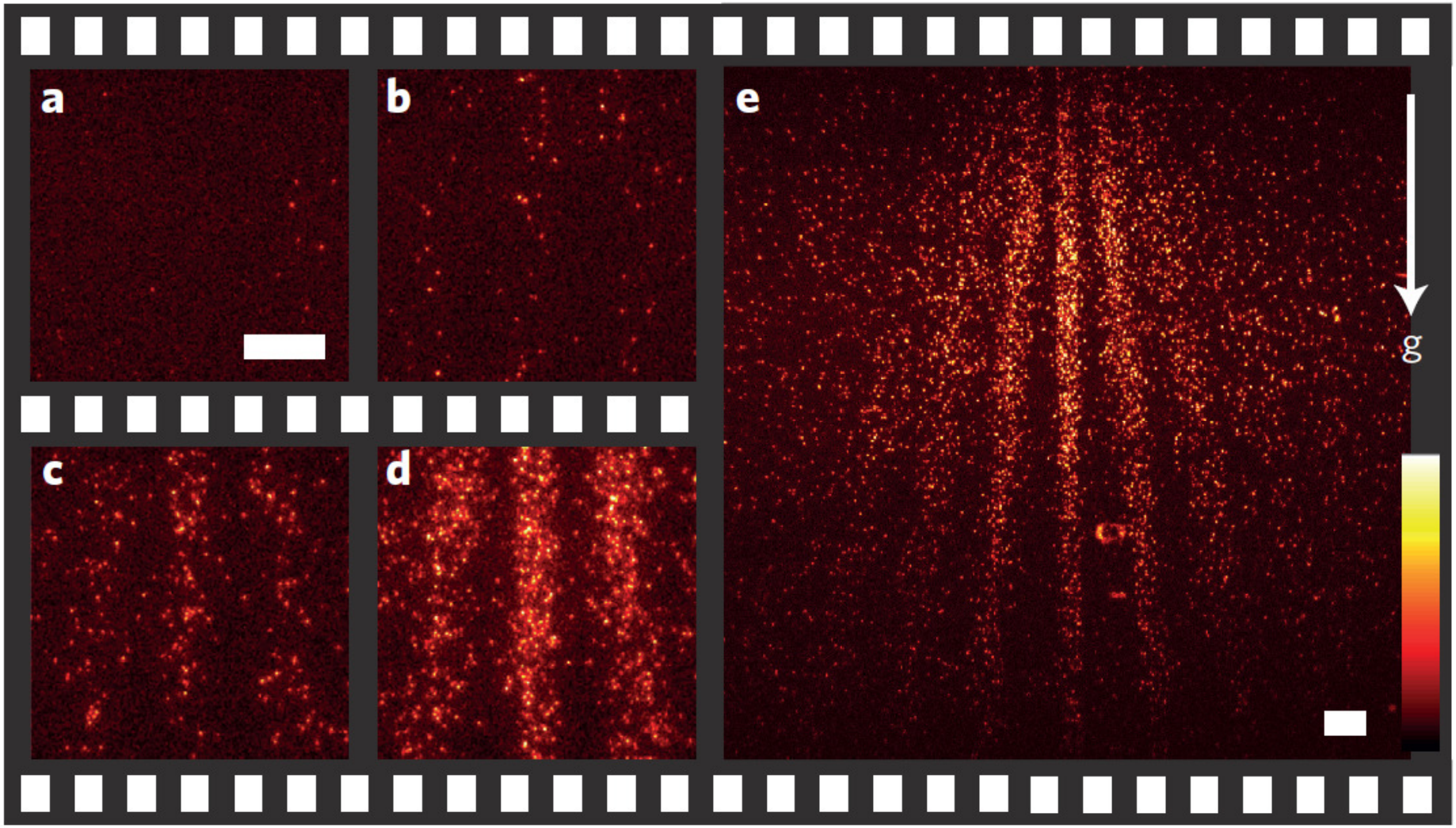
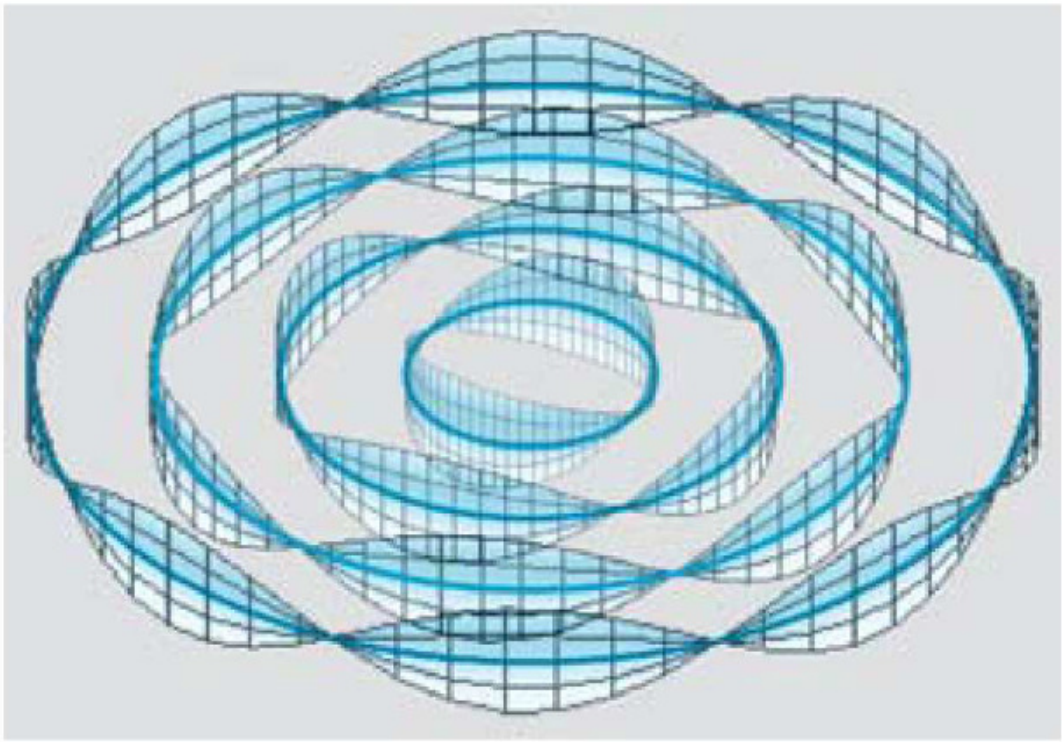
Real-time single-molecule imaging of quantum interference

Thomas Juffmann[1], Adriana Milic[1], Michael Müllneritsch[1], Peter Asenbaum[1], Alexander Tsukernik[2], Jens Tüxen[3], Marcel Mayor[3,4], Ori Cheshnovsky[2,5] and Markus Arndt[1]*




a
b
c
d
e
g

Elektronenwellen und das Bohrsche Atommodell



Stationäre Bahnen von Elektronen nur durch konstruktive Interferenz der Elektronenwellen mit sich selbst (stehende Wellen):

$$n\lambda = 2\pi r, \text{ mit } n = 1,2,3$$

Mit $\lambda = h/p$ und $L = rp$ folgt: $L = n\hbar$