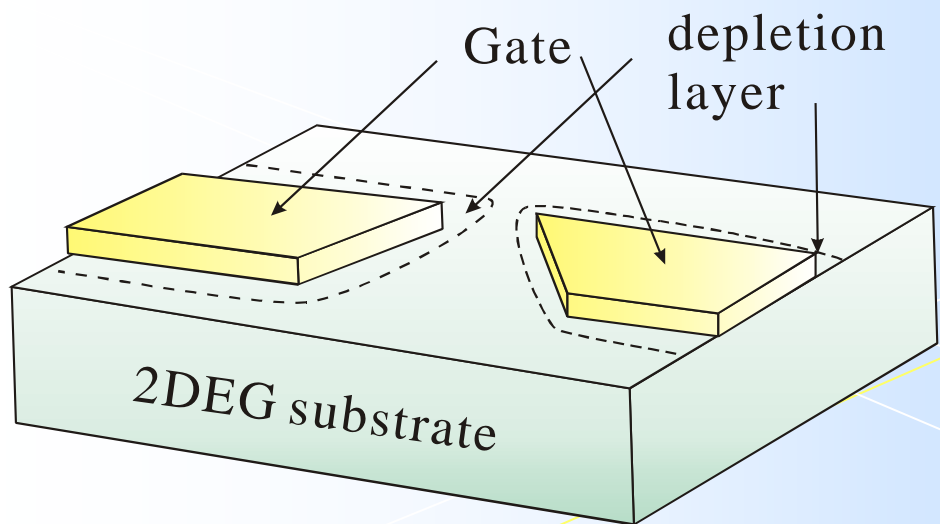
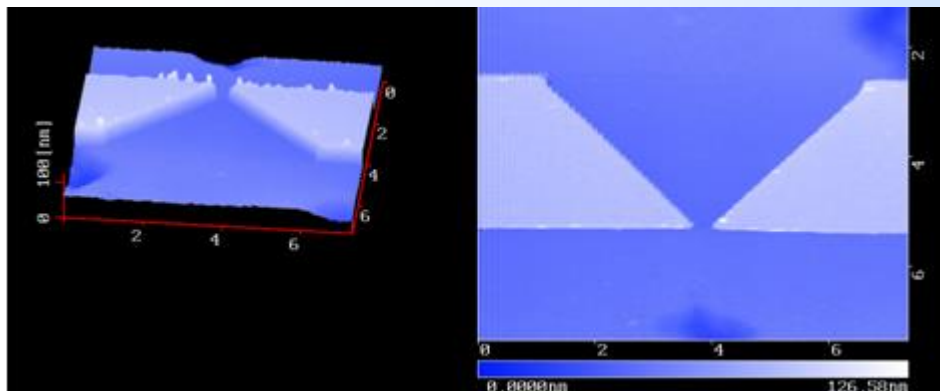


Physics of Semiconductors (10)

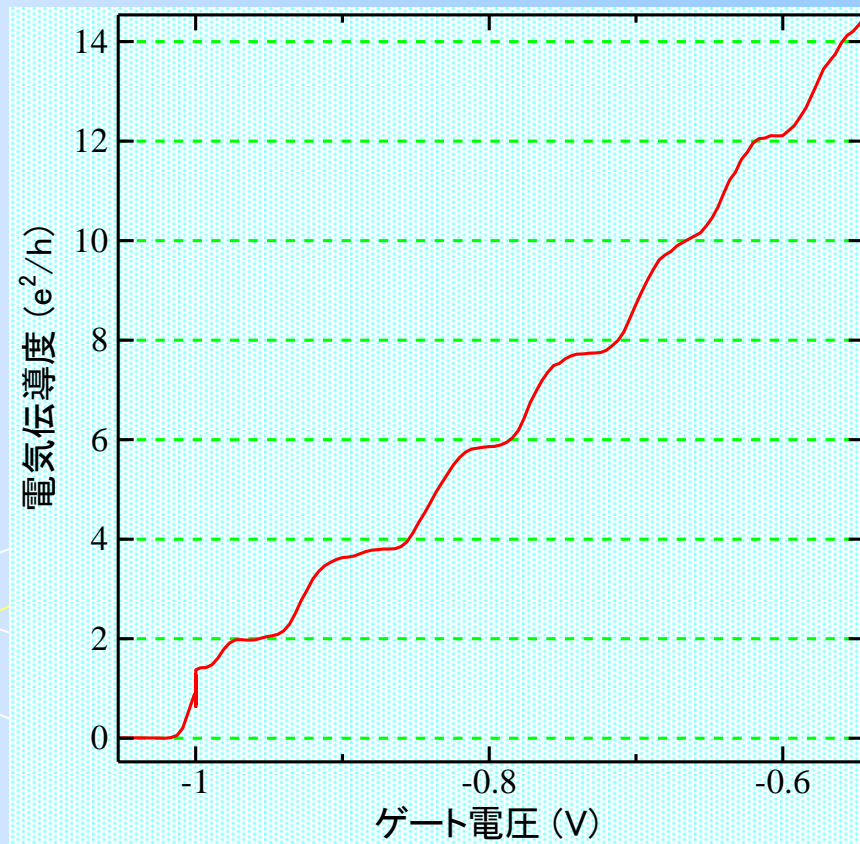
Shingo Katsumoto
Institute for Solid State Physics,
University of Tokyo

2013/6/20

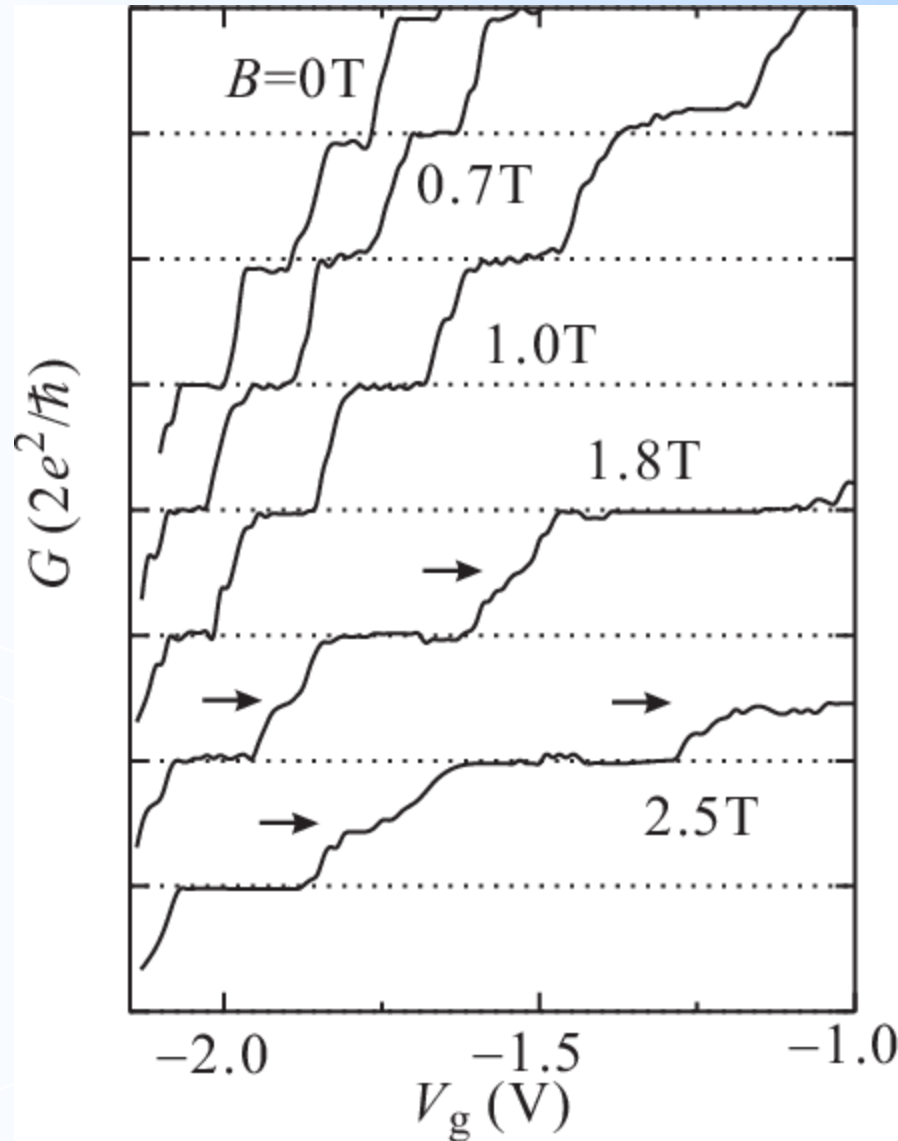
Transport through quantum point contact (QPC)



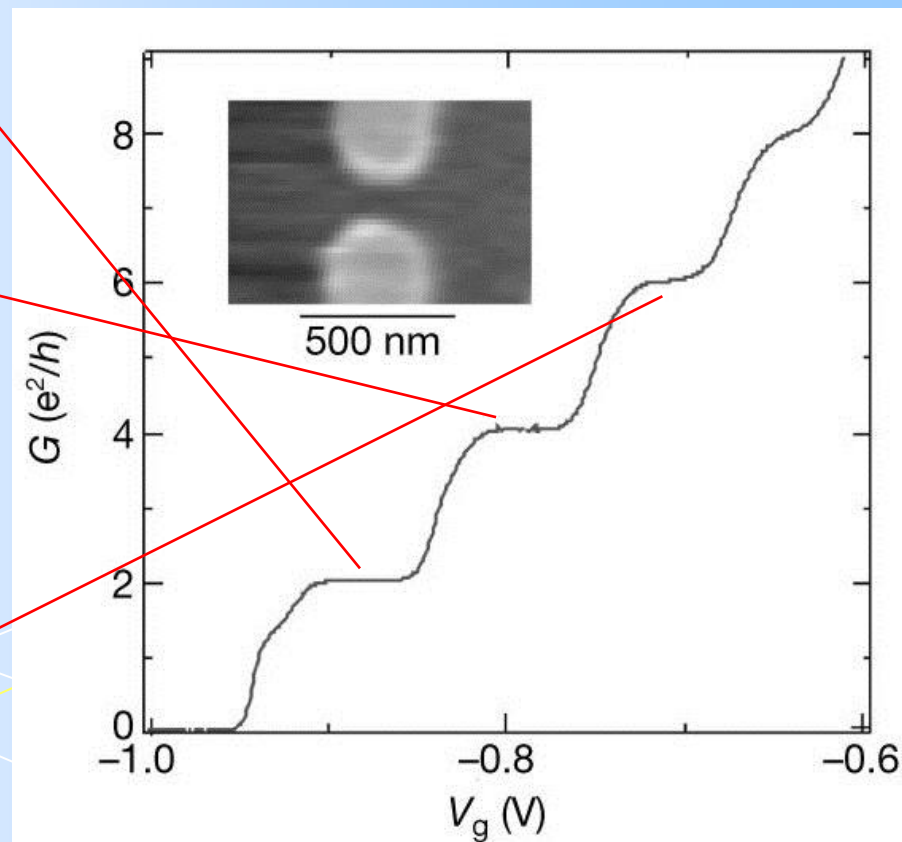
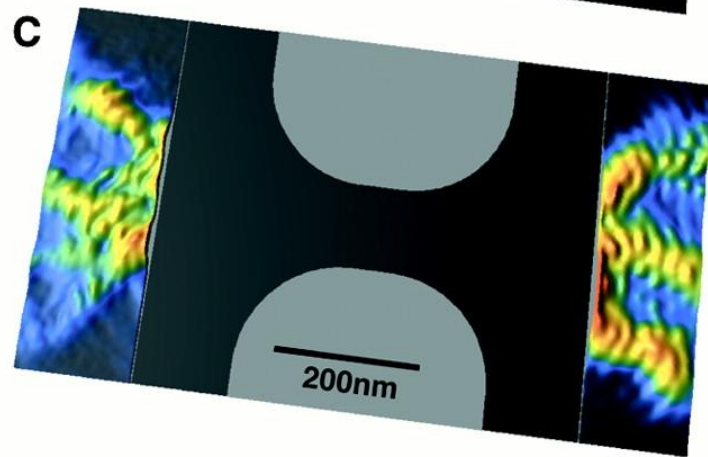
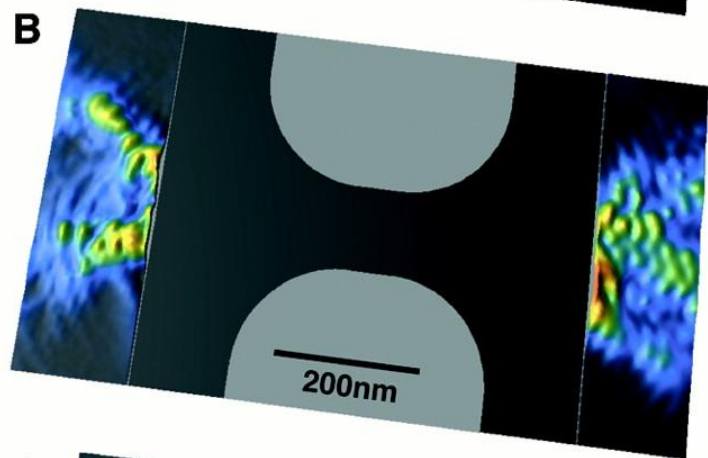
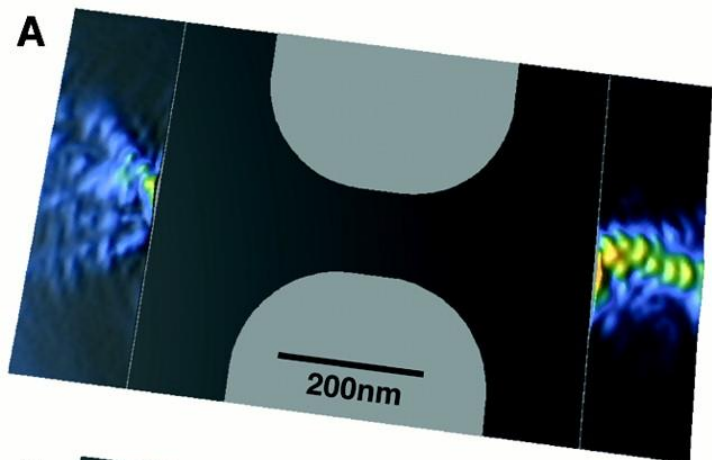
Quantum Point Contact (QPC)



Split of steps with magnetic field

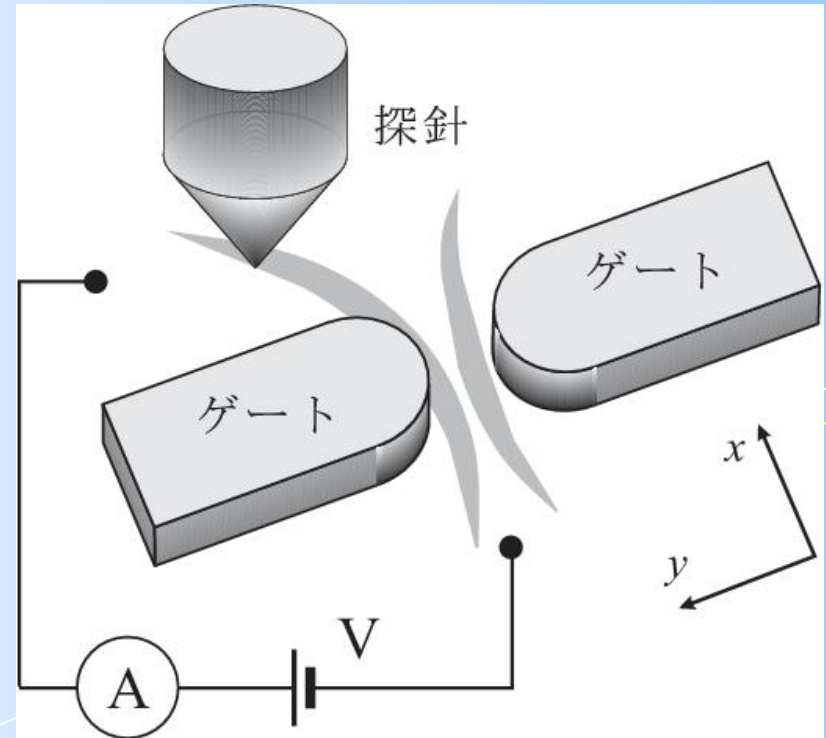
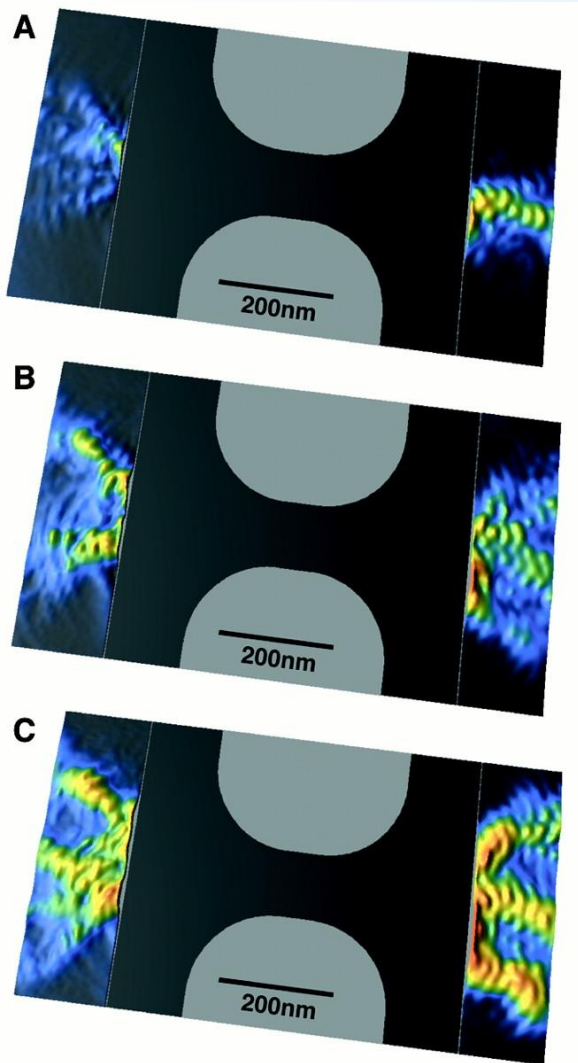


Is quantization on each mode true?



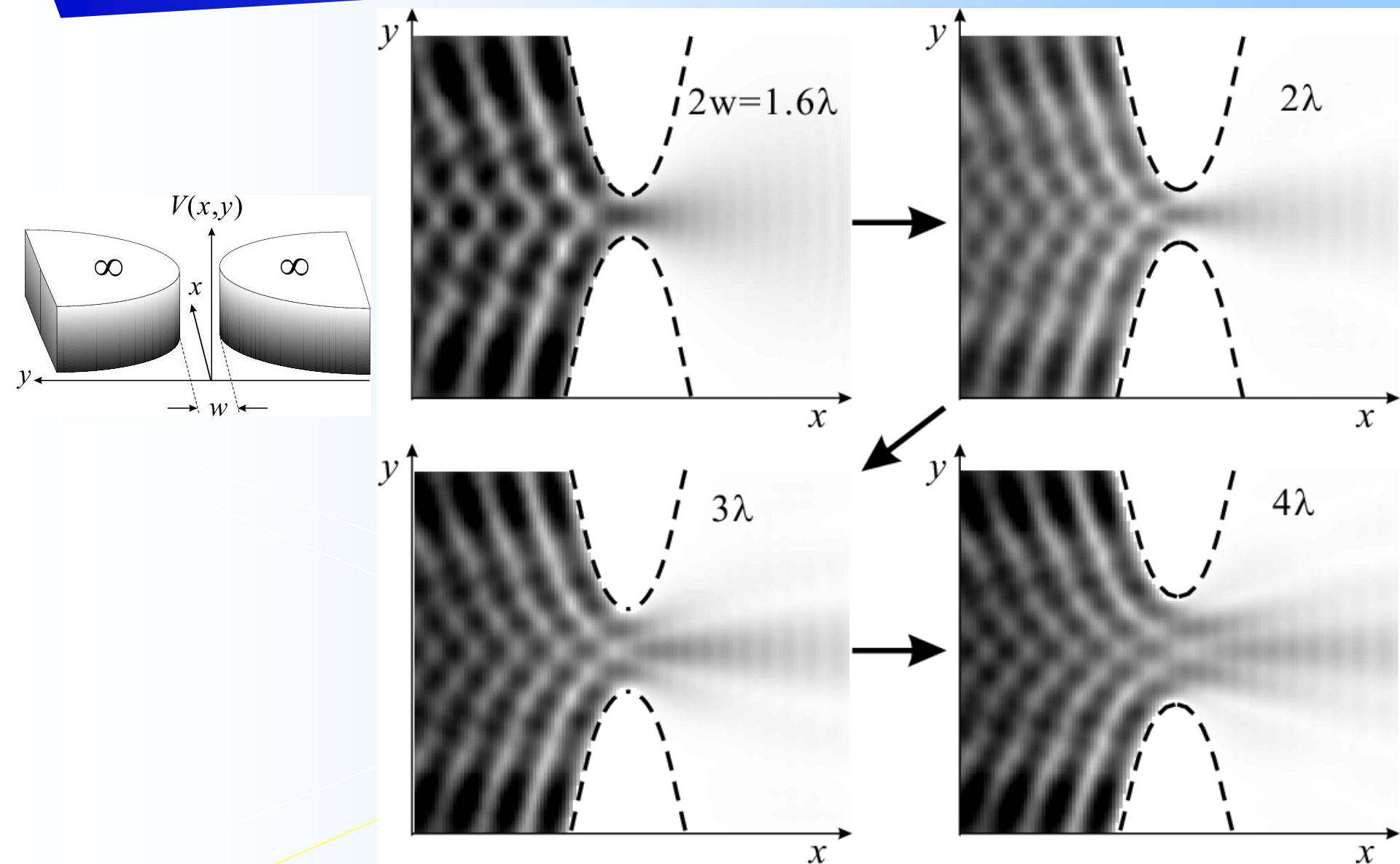
$\Delta G:$ $0 e^2/h$ $-1.7 e^2/h$

Scanning probe conductance spectroscopy

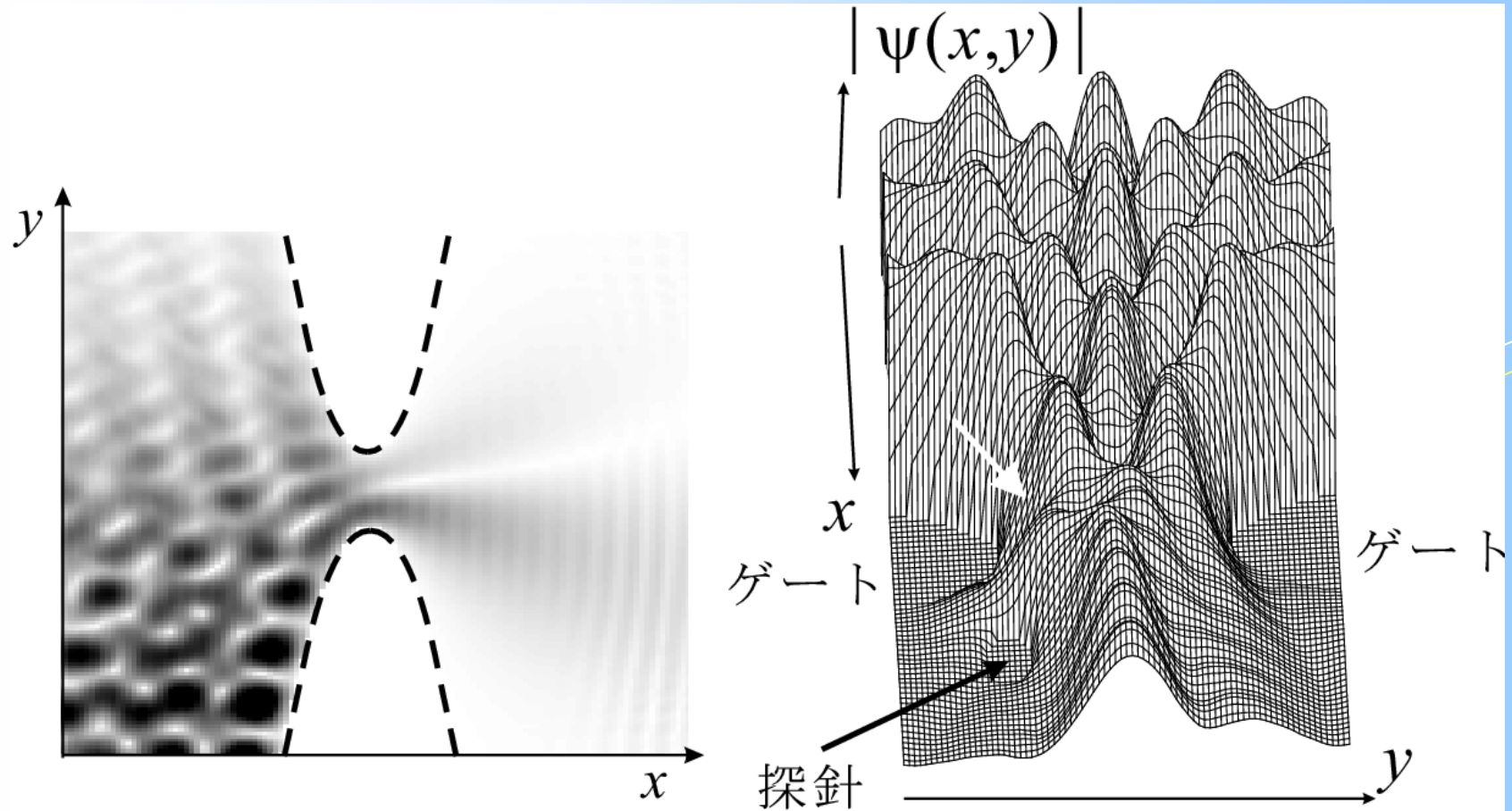


ΔG : $0 e^2/h$  $-1.7e^2/h$

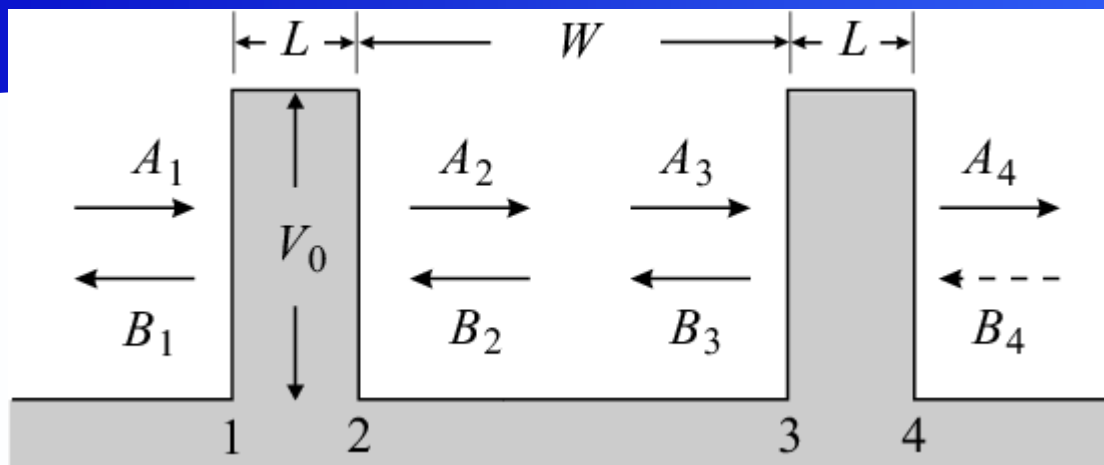
Numerical calculation of wavefunctions



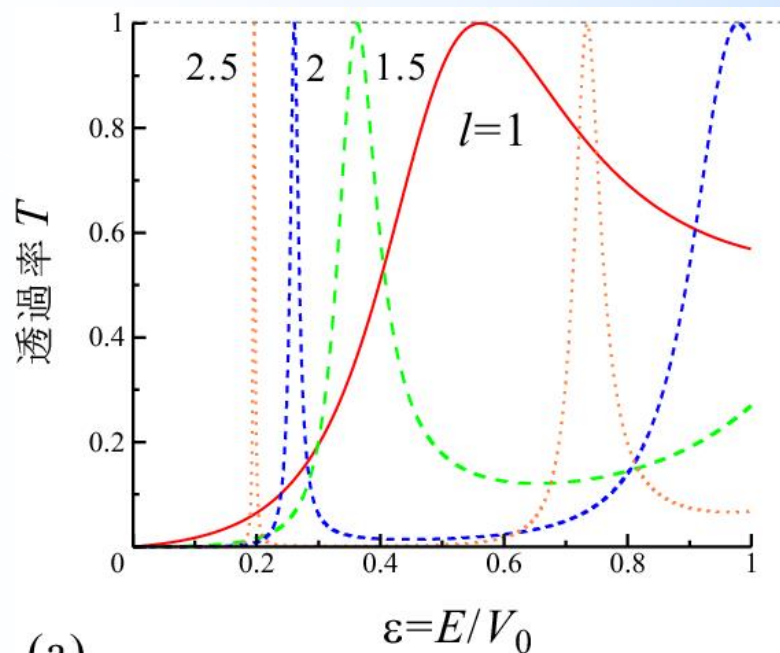
wavefunction for $n=2$, effect of probe



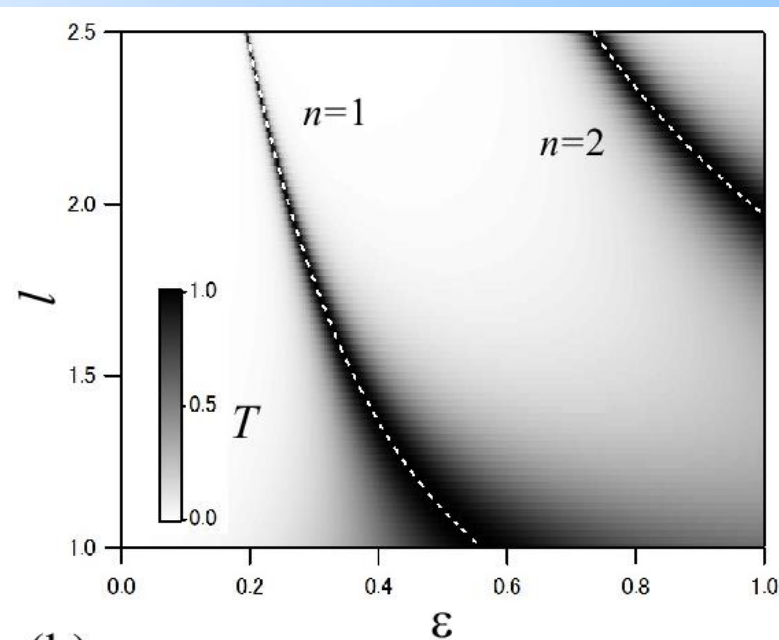
Double barrier diode



$$l \equiv \frac{\sqrt{2mV_0}}{\hbar} L$$

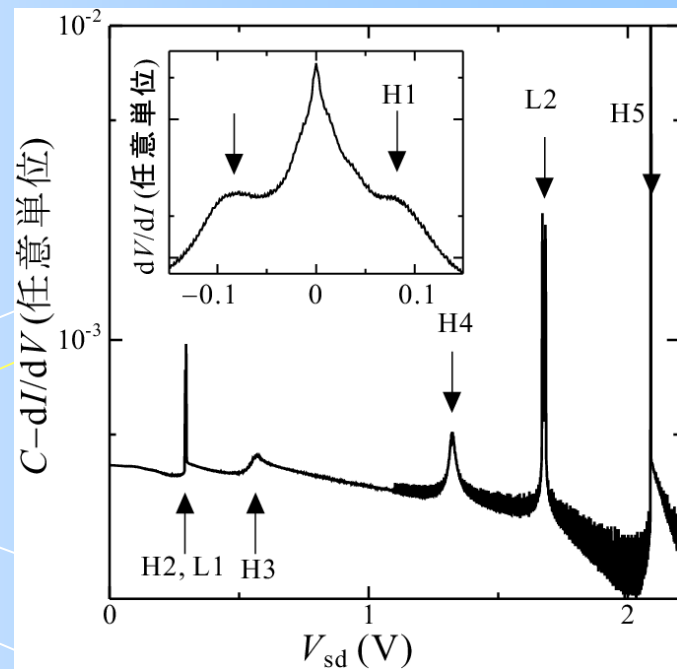
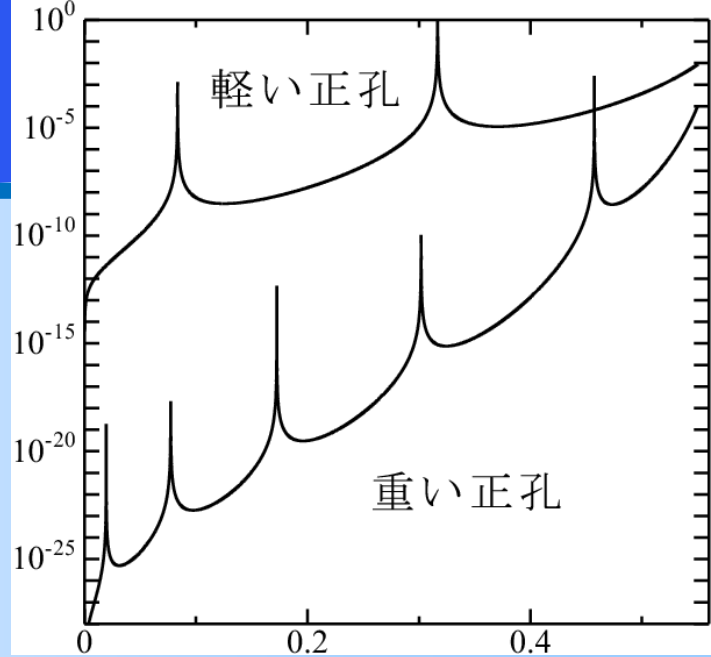
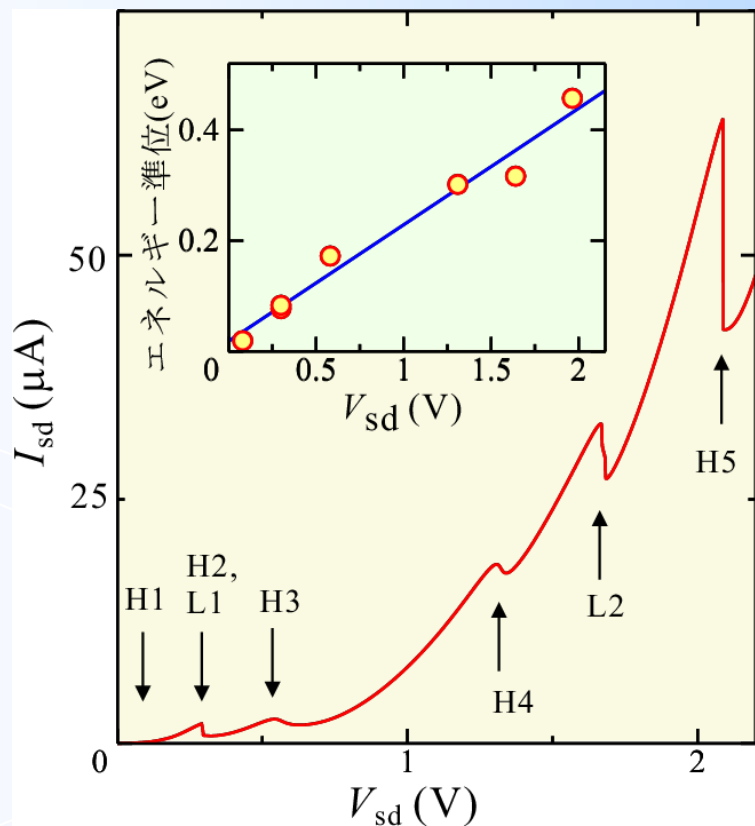
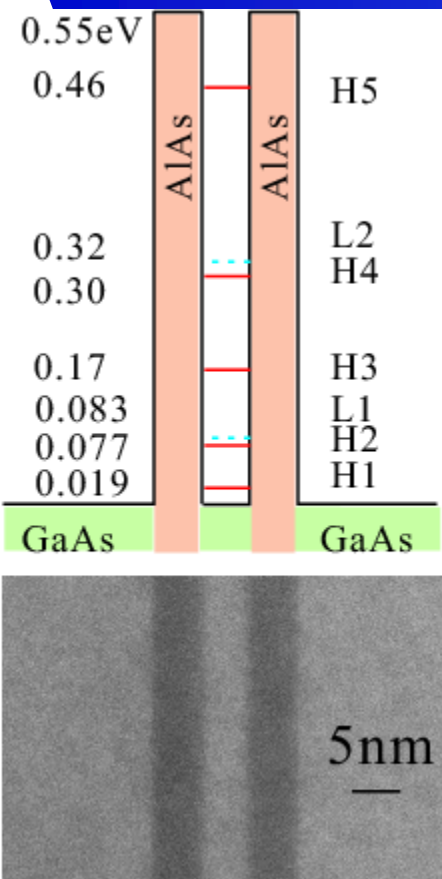


(a)

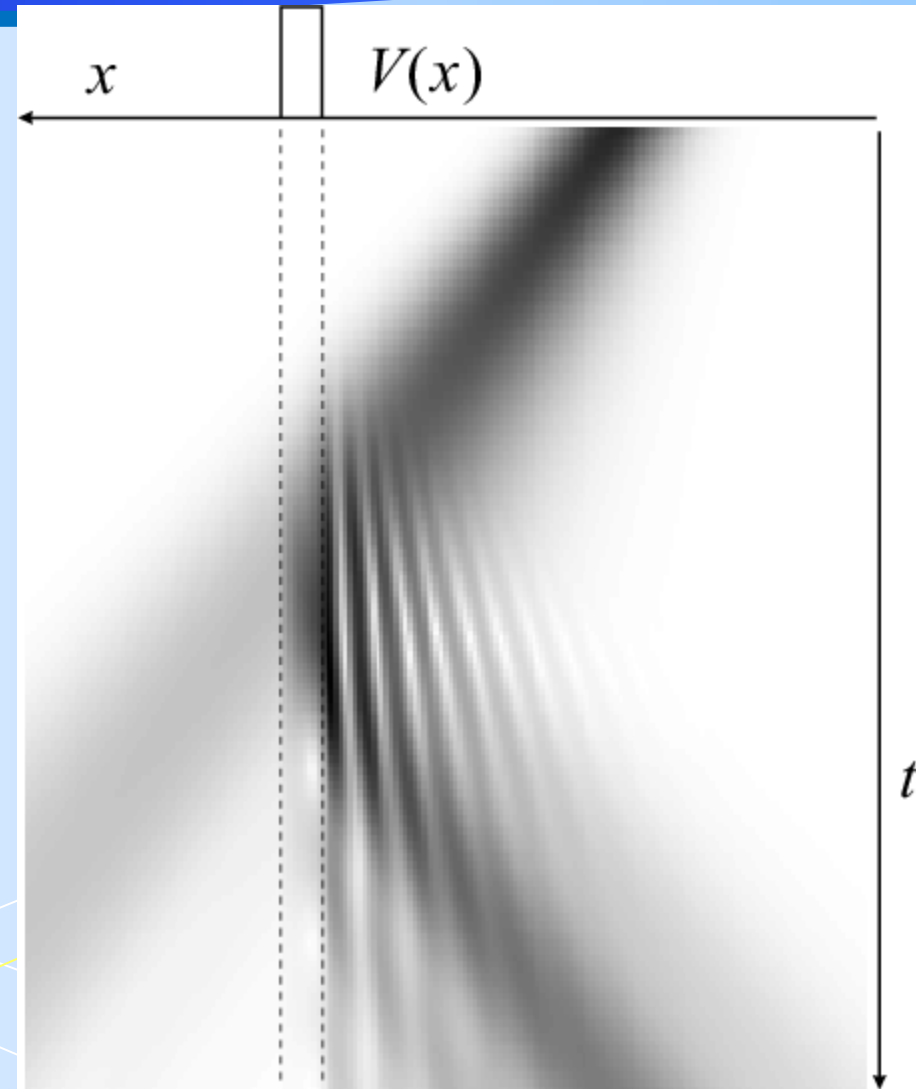
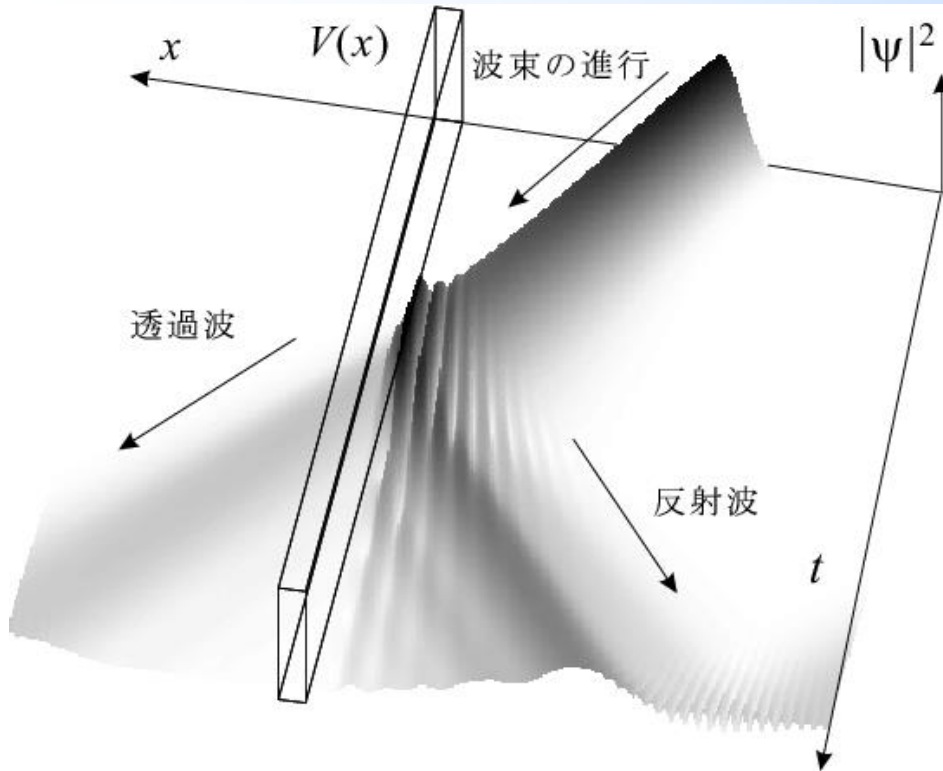


(b)

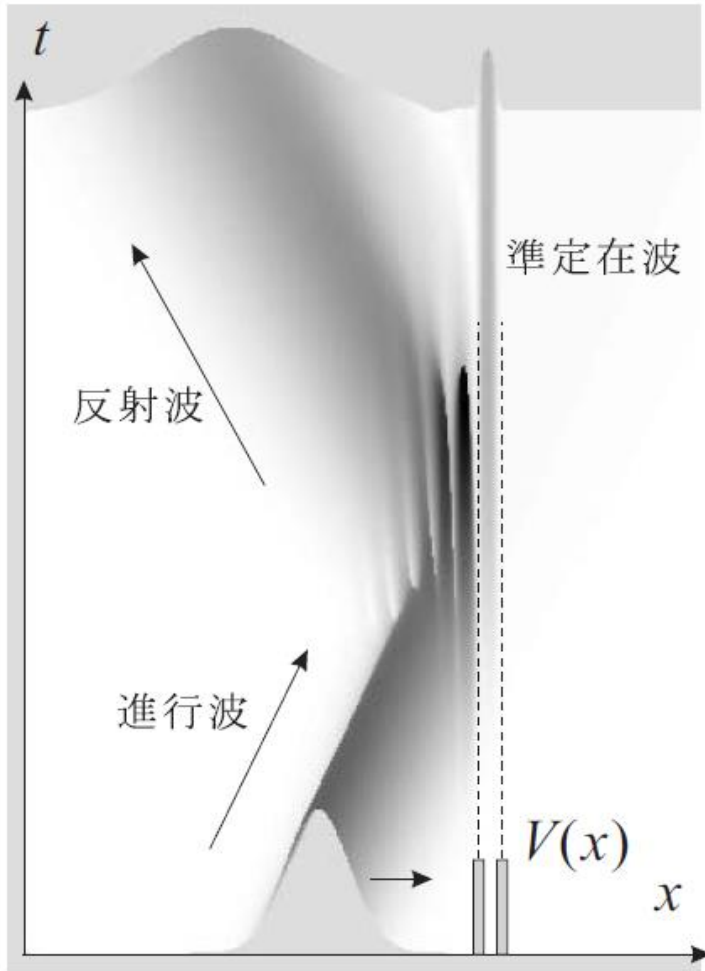
Double barrier diode: an experiment



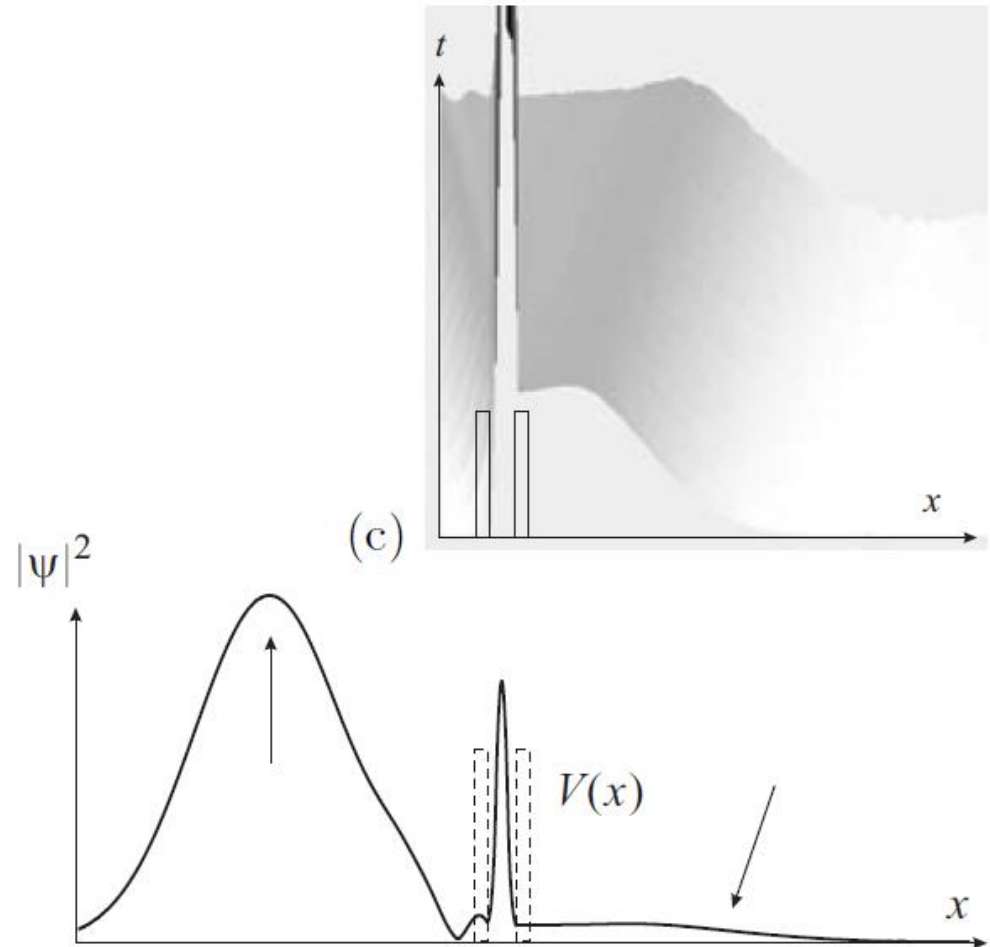
Collision of a wave packet to a potential barrier



Collision of a wave packet to a double barrier



(a)



(b)

(c)