

# Wannier function in 1D

**Bloch**

$$\psi_k(x) = u(x)e^{ikx}$$



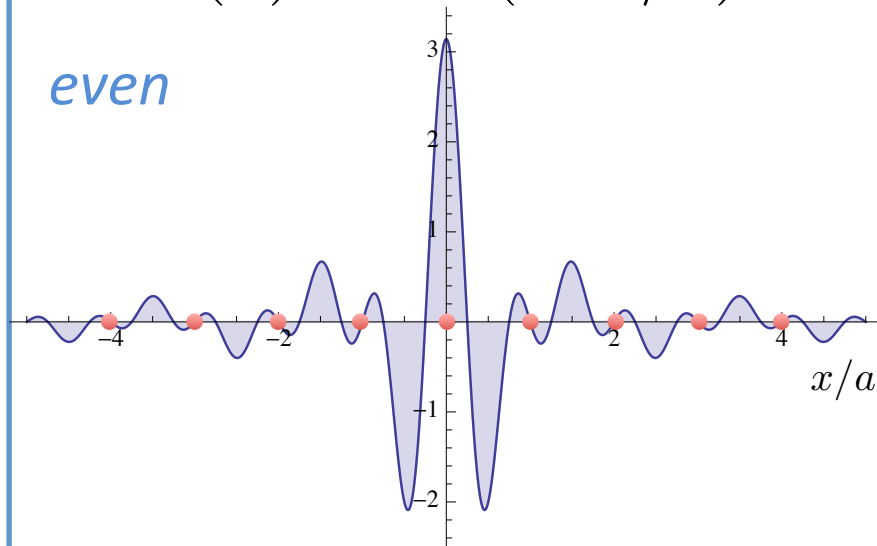
**Wannier**

$$w(x) = u(x) \frac{\sin(x\pi/a)}{x\pi/a}$$

not  $k$ -dependent

$$u(x) = \cos(2\pi x/a)$$

*even*



$$u(x) = \sin(2\pi x/a)$$

*odd*

