

## **Primer on Semiconductors Lecture 1.5 Quick Problem**

Mark Lundstrom  
Purdue University, Fall 2018

Answer the questions below.

**Consider an electron in the conduction band of Si with a kinetic energy of 0.1 eV. What is the magnitude of the electron's wavevector,  $k$ ?**

HINT: Begin with the classical relation, and adapt it accordingly.

**Compare the magnitude of  $k$  to the largest  $k$  possible, which is about  $\pi/a$ . You may assume that the lattice constant is  $a = 0.357$  nm.**