

Quantum Mechanics 1 – Problem 5

A beam of 3.55 keV X-rays is directed at a crystal. As the angle of incidence is increased from zero, the first strong interference maximum is found when the beam makes an angle of 18.0° with the planes of the crystal.

- a) Calculate the distance between the adjacent planes. [4 marks]
- b) Find the angles at which any further interference maxima occur. State what condition must be satisfied for further maxima to occur? [4 marks]
- c) Find the longest wavelength for which two interference maxima would be produced. [2 marks]