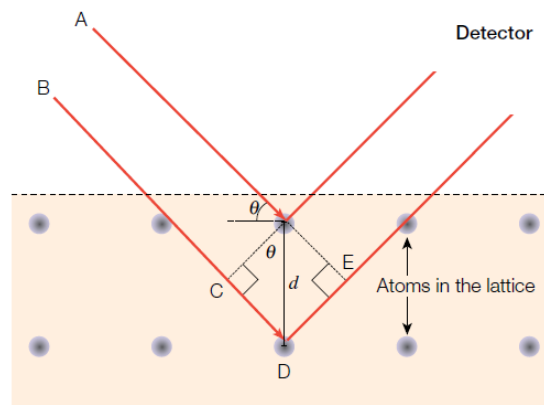


9.4.4 Superconductors

Investigations into the electrical properties of particular metals at different temperatures led to the identification of superconductivity and the exploration of possible applications

4.1 Outline the **methods used by the Braggs** to determine crystal structure

- William **Henry** and William **Lawrence Bragg** investigated X-rays and their interaction with **lattices**
- - Like water **waves** diffracting from a slit, X-rays diffract in solid lattices



- X-ray interference pattern can be made for **constructive interference**
- **Modified (Bragg X-ray) spectrometer** fires a parallel beam of X-rays at **NaCl crystal**
 - X-rays diffract and enter **ionisation chamber**, detecting intensity of X-rays
- Obtain '**d-spacing**' by using/changing the **incidence angle** and **wavelength** (as constructive interference comes in integer values of $n\lambda$) and measured as $n\lambda = 2CD = 2d\sin\theta$
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