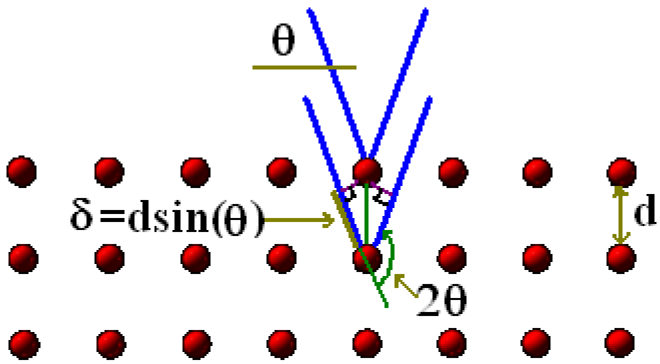
X-ray scattering (Laue 1879-1960, Bragg(s) 1890-1971,1862-1942)
You can find a lot of Laue patterns here:
http://images.google.com/images?hl=en&q=laue%20pattern&btnG=Google+Search&sa=N&tab=wi
Per Bragg: the dots correspond to crystalline planes (of which there are lots for cubic symmetry)
And, the planes are not all of the same separation. I have a vrml (or two) of this.
Bragg's Law:



For constructive interference, the path difference must be equal to an integer number of wavelengths. In this case, we consider non-normal incidence, thus:

$$2d\sin(\theta) = n\lambda; n = 0, \pm 1, \pm 2, \ldots$$

The first order maxima is at n=1 which is:

$$\sin(\theta_1) = \frac{\lambda}{2d}$$

(remember the mercury vapor spectrum as seen after passing a grating in lab)

In any event, suppose you observe an x-ray diffraction first order maxima (a spot) at 21^0 from the incident direction. If the crystalline structure if it is known to be cubic and the wavelength of the incident radiation is 0.098 nm, what is the crystalline spacing for this plane?

$$d = \frac{\lambda}{2\sin(\theta_1)} = .282\text{nm}$$

Recall deBroglie's hypothesis:

$$\lambda = \frac{h}{p}$$

Davisson and Germer (1925) at Bell Labs (Lu)
Electron diffraction image

Ultimate result: they found electron scatter off of a single nickel crystal forms an interference pattern which can be described by Bragg's law with the wavelength given by deBroglie's hypothesis.
This is essentially verification of deBroglie's hypothesis.