

57. There are two unknowns, the x-ray wavelength λ and the plane separation d , so data for scattering at two angles from the same planes should suffice. The observations obey Bragg's law, so

$$2d \sin \theta_1 = m_1 \lambda$$

and

$$2d \sin \theta_2 = m_2 \lambda .$$

However, these cannot be solved for the unknowns. For example, we can use the first equation to eliminate λ from the second. We obtain

$$m_2 \sin \theta_1 = m_1 \sin \theta_2 ,$$

an equation that does not contain either of the unknowns.