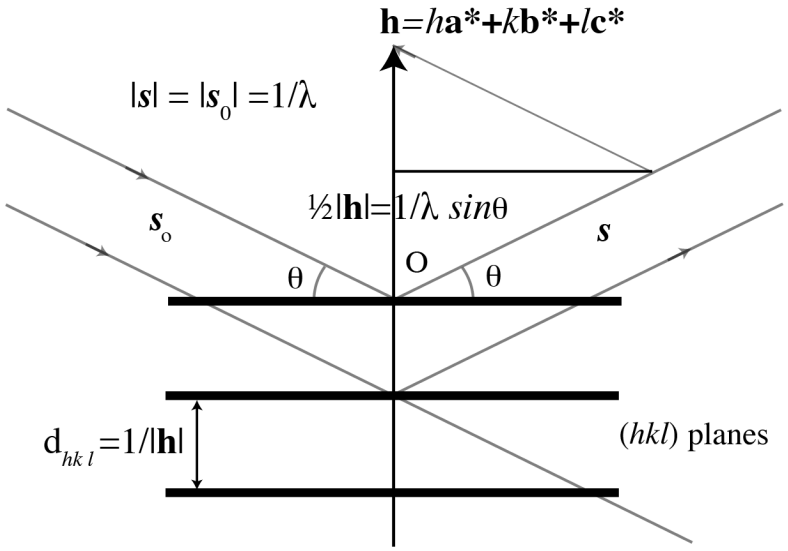
What is the relation between the Laue diffraction condition and the Bragg's equation ?

There is a direct relationship between the **Laue condition of diffraction** and the **Bragg's equation**. The former is a vector equation and thus illustrates more clearly the relation between the reciprocal lattice vectors **h** and the incident $\mathbf{s}_0$ and diffracted beam **s**. As **h** can be easily related to the orientation of the unit cell, the Laue condition $\mathbf{s}-\mathbf{s}_0 = \mathbf{h}$ illustrates nicely the geometrical relations of the diffraction phenomenon. The Bragg equation is purely scalar and thus does not easily relate to the geometrical interpretation.

The relation between the Laue and Bragg interpretation is illustrated in the following figure.



From the isosceles triangle between $\mathbf{s}_o$, **s** and **h**, and the relation $d = 1/|\mathbf{h}|$ we can deduce the following relation

$$2d\sin\theta=\lambda$$

which is **Bragg's equation**. Usually, this equation is also expressed with an integer factor *n* associated with λ. We prefer to use the formulation without any integer factor in order to be consistent with the relation $d = 1/|\mathbf{h}|$.