

Bragg's Law

by Robert William Whitby

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

What it means:

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

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

but $(1/2d)/\lambda \times n\lambda = n/2d$

and $(1/2d)/\lambda \times 2d = 1/\lambda$

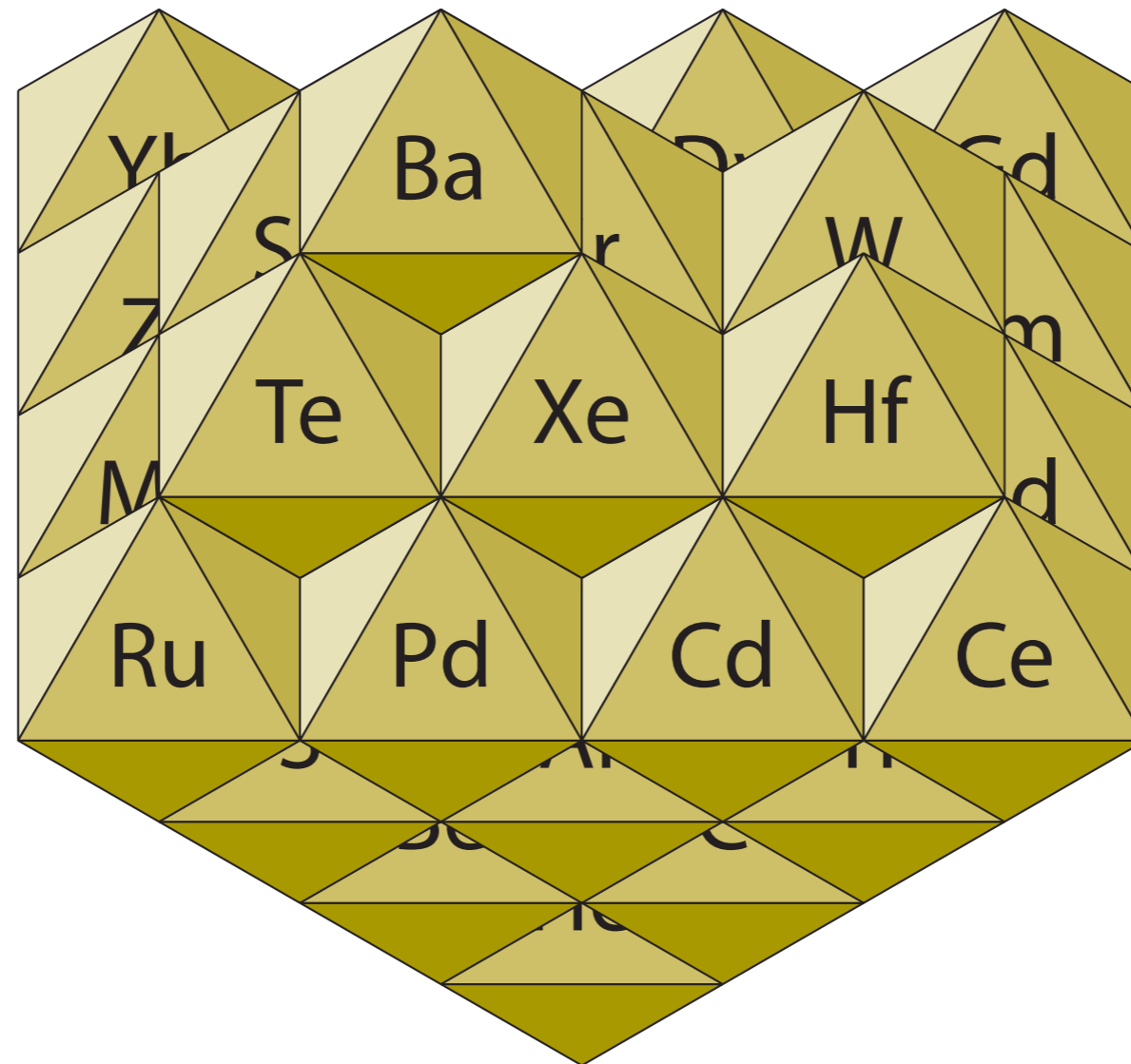
so that $(n/2d) / (1/\lambda) = \sin\theta$

$(1/2d)$ and $(1/\lambda)$ are momenta

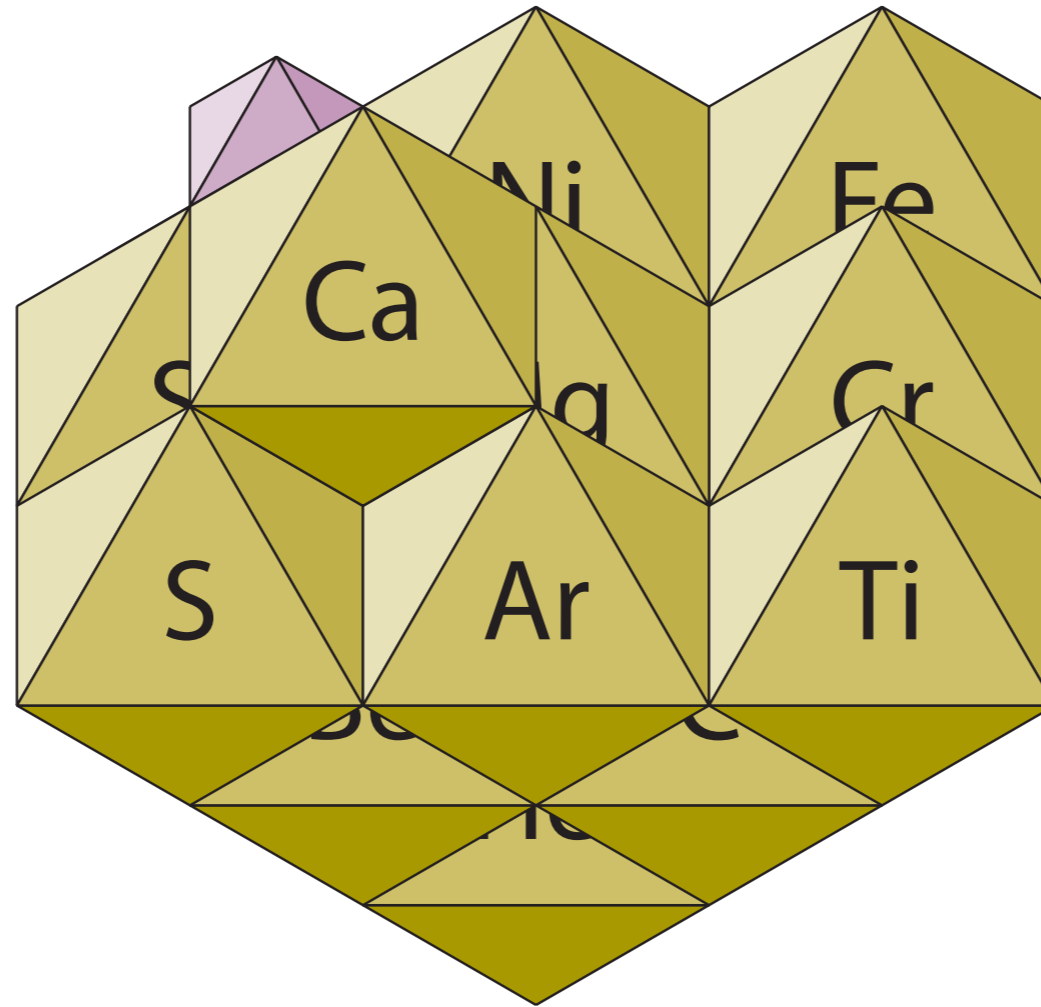
$(1/2d)$ is the momentum of the crystal oscillator

$(1/\lambda)$ is the momentum of the photon

X-ray tube photons

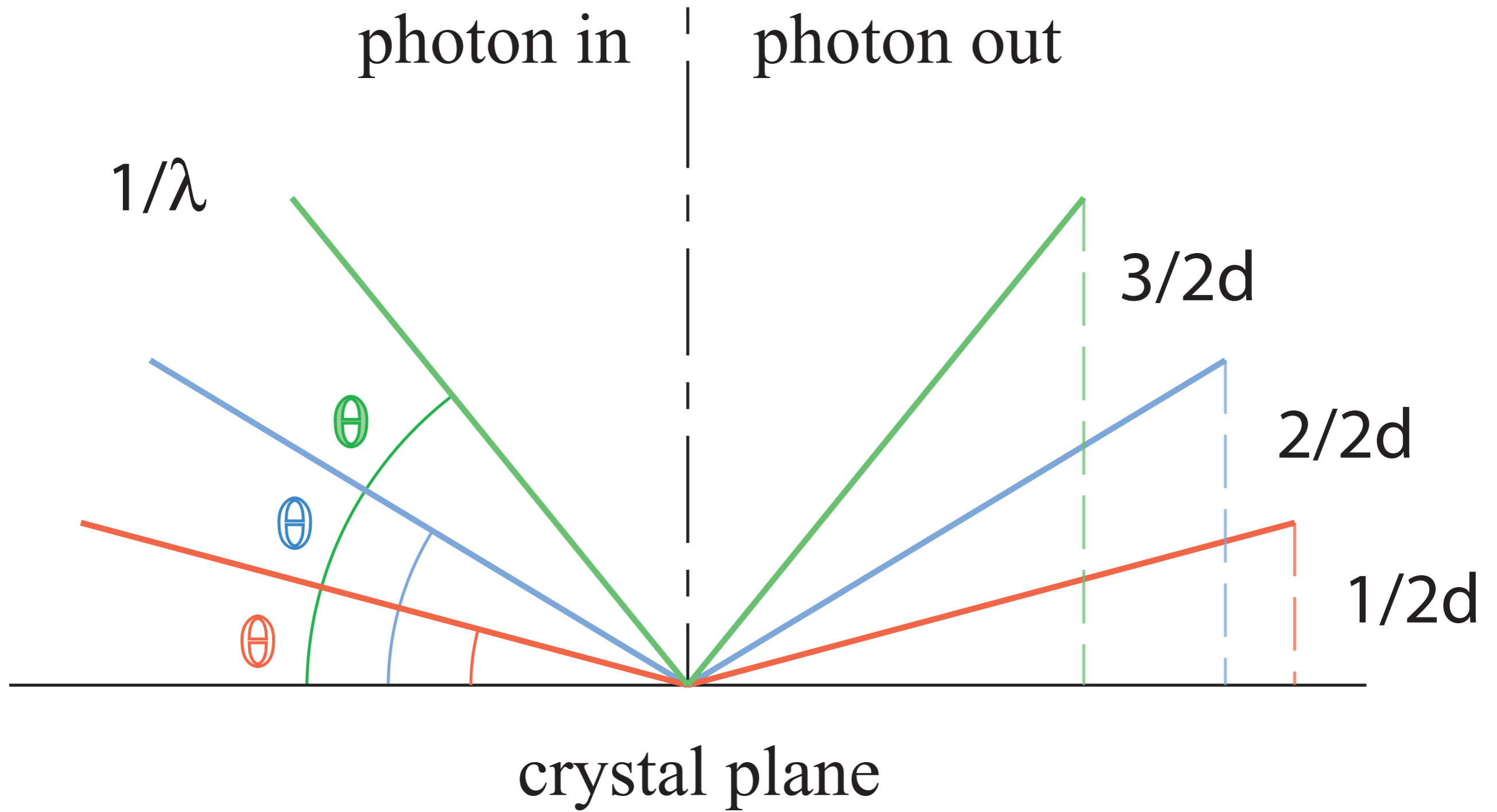


**Tungsten atom—
an x-ray photon
emitted from the cathode**



**Copper atom—
an x-ray photon
dislodged from the anode
by a tungsten atom**

X-ray photon vectors



References

www.RobertWilliamWhitby.com

Octahedron 1stEd.pdf

Wien's Displacement Law

The end