Poster Presentation

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The mathematics of crystallography in senior secondary schooling

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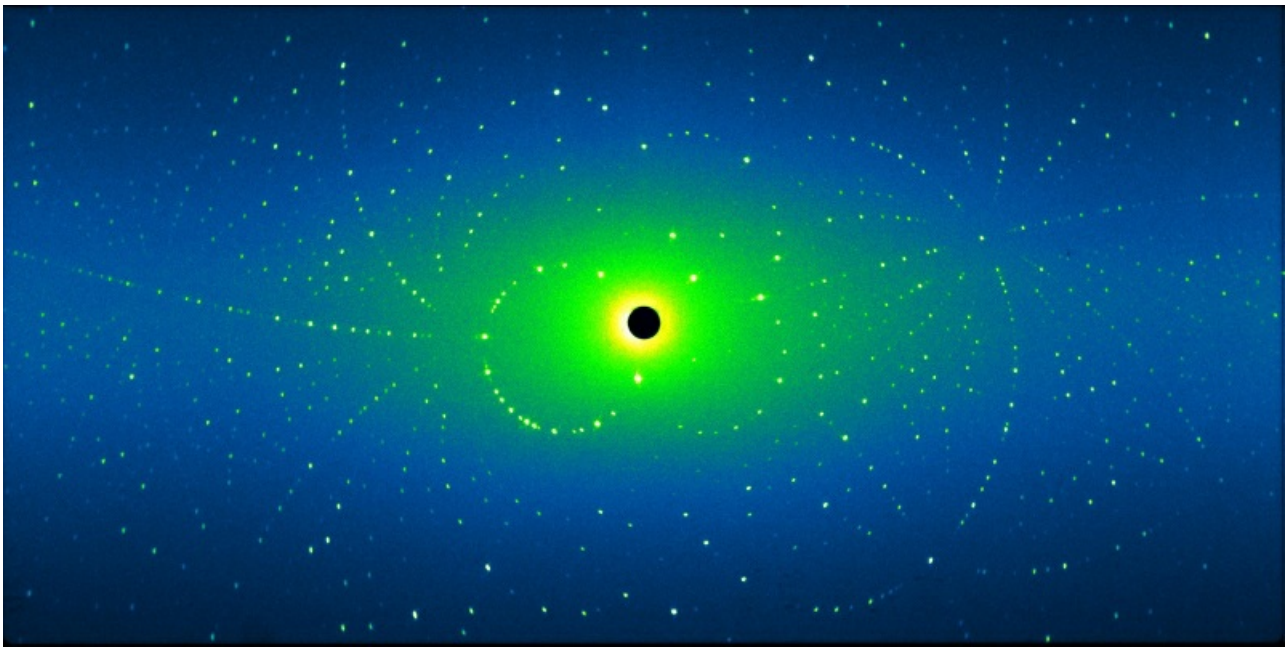
The mathematics required to comprehend much of crystallography is widely taught in the senior years of secondary schooling in many countries, at the same time, there is consternation regarding perceived losses in interest in STEM (Science, Technological, Engineering and Mathematics) subjects, and worse, a failure to engage a significant proportion of young women in these topics in the first instance.

In observing the beautiful patterns which result from Laue diffraction experiments we have been encouraged to explore the possibility of employing tools originally developed to analyse experimental patterns[1, 2] as a conduit through which students may be engaged in the exploration of a mathematically based subject. The aesthetically pleasing demonstrations of real-life examples can be shown while the modifications which occur with changing orientation or cell dimensions can be explored.

In the context of the current New South Wales Higher School Certificate, conic sections appear as a topic of study and the relevance of Conics to the interpretation of Laue patterns is an appealing example of the application of what might otherwise appear to be an obscure branch of geometry.
[1] Piltz, R. Acta Crystallogr. Sect. A 2011, 67, C155
[2] DOI: 10.13140/RG.2.1.4954.1202



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