

classes. Alternatively, modifications to the Langevin equation for β_{ξ} may be required, possibly using a different set of statistics for ξ .

The present description of dynamical diffraction in imperfect crystals provides an alternative approach to dealing with the effects of the randomisation of the phases of the X-ray beams. A study of the behaviour of the 'flow' of points in the complex reflectance plane has led to the development of a defect model based on a stochastic differential equation. The model contains two parameters which govern the degree of imperfection of the crystal and the length scale over which changes in the crystal occur. The natural extension of this model is a Fokker-Planck equation describing the probability density of finding a particular state of the X-rays within a crystal. This provides a theoretical framework for the calculation of the diffraction intensities from imperfect crystals. While it is likely that general solutions to the Fokker-Planck equation are not possible, the geometric description of 'flows' in the complex plane provides an intuitive basis for finding approximate solutions.

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