

Mmpxrt - New X-ray tracing code not only for mosaic crystal spectrometers.

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A new X-ray tracing code became available for general use last year. [1] It is dedicated to study and design X-ray crystal optics, with a special focus on mosaic crystal spectrometers. Its main advantage is that it includes a detailed and benchmarked algorithm to treat mosaic crystals, especially HOPG and HAPG. It is preferentially made to study crystal spectrometers, therefore their implementation is very straightforward and includes the automated evaluation of their performance. It can, however, be used universally to study other Bragg crystal based instruments, such as monochromators. In last years it was, for example, used to design an HAPG mirror to reflect the Small Angle X-ray Scattering (SAXS) in the harsh environment of high intensity laser interaction at the European XFEL laboratory. [2] Several use cases of the code will be presented.

[1] M.Šmíd et al., X-ray spectrometer simulation code with a detailed support of mosaic crystals. <https://doi.org/10.1016/j.cpc.2020.107811>

[2] M.Šmíd et al., Mirror to measure small angle x-ray scattering signal in high energy density experiments. <https://doi.org/10.1063/5.0021691>.

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