

# **VOXES: a millimetric effective source size HAPG crystals based Von Hamos spectrometer as a tool for extreme precision exotic atom spectroscopy**

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One of the more quoted methods to perform high energy resolution X-ray measurements is given by the Bragg spectroscopy. The requirement on the size of the target not to exceed tens of microns represents the major hindrance in its use when the photons emitted from extended sources (millimetric) need to be measured. Also, the typical very low efficiencies of Bragg spectrometers prevent them from being used in several applications. To overcome this problem the VOXES collaboration at INFN National Laboratories of Frascati developed a prototype of a high resolution Von Hamos X-ray spectrometer using HAPG (Highly Annealed Pyrolytic Graphite) mosaic crystals. This technology allows the employment of extended isotropic sources and makes possible its application in several physics fields as the exotic (kaonic) atoms precision measurements. The performance of this device has been explored in terms of reflection efficiency and the results for a  $\rho = 206.7$  mm cylindrically bent HAPG crystal using CuK $\alpha_{1,2}$  and FeK $\alpha_{1,2}$  XRF lines compared with the simulated data will be presented. This kind of study is fundamental since it permits to retrieve information on the signal collection efficiency in the energy range in which the standard calibration procedures cannot be applied.

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