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Characterization of the AstroBox2 detector in online conditions

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The AstroBox2 detector [1] is a gas-filled calorimetric detector for almost background free low-energy beta-delayed particle spectroscopy. It is an upgraded version of the original AstroBox proof-of-concept detector [2] based on Micro Pattern Gas Amplifier Detector (MPGAD) technology. After the initial commissioning described in [1] some extensive upgrades have been made in conjunction with the first physics experiments. A new gating grid covering the whole detector has been built and instrumented with a dedicated fast HV switch. The setup has been instrumented further with two different high-purity Ge detector setups for particle-delayed gamma detection. So far beta-decays of ^{20}Na , ^{23}Al , ^{25}Si , ^{31}Cl , ^{32}Cl , and ^{35}K have been studied with the setup. The diverse chemical nature of the studied isotopes, beam rates, and the laboratory environment stability has been observed to have influence on the measured decay spectra. The physics results will be discussed elsewhere and here we present some of the results that can have an influence on other similar experiments with stopped rare isotope beams and detectors relying on gas amplification.

[1] A. Saastamoinen et al., Nucl. Instrum. and Meth. in Phys. Res. B **376**, 357 (2016).

[2] E. Pollaco et al., Nucl. Instrum. and Meth. in Phys. Res. A **723**, 102 (2013).

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