



Contribution ID: 1612 Contribution code: THPL100

Type: **Poster Presentation**

Raspberry Pi cameras as beam induced fluorescence monitors for low and high energy beams

Thursday 11 May 2023 16:30 (2 hours)

Miniature single-board cameras have been used for several years to monitor beam-induced residual gas fluorescence. This work gives an overview of the use of so-called Raspberry Pi cameras in accelerator experiments. These devices are installed in vacuum at hard-to-reach locations. They have been tested in strong magnetic fields with low energy proton beams from 2 keV to 60 keV. They have also been tested in the high energy range with 4.8 MeV/u, $^{48}\text{Ca}^{10+}$ beams. Nitrogen and argon were used as residual gas and the pressure was varied from $1 \cdot 10^{-5} \text{ mbar}$ to 1 mbar .

Funding Agency

Footnotes

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Yes

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Session Classification: Thursday Poster Session

Track Classification: MC6: Beam Instrumentation, Controls, Feedback and Operational Aspects: MC6.T03: Beam Diagnostics and Instrumentation