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## Four-Stage Diamond Spectrometer for Low-Energy Proton Identification

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Thin planar single-crystal chemical vapour deposition (sCVD) diamond sensors enabled the development of a multi-stage spectrometer capable of measuring low-energy protons in the range of 2 MeV to 20 MeV. In this study, a CIVIDEC B14 Diamond Telescope Detector was utilised to analyse a proton beam generated by neutron interactions with a polyethylene converter. This shows the background suppression capabilities of the spectrometer. The experimental data was compared with Geant4 simulations for a proton beam with a Gaussian energy distribution of  $(12.7 \pm 0.5)$  MeV. The comparison shows an excellent agreement between the measurement and simulation, allowing for a detailed study of the proton interaction with sCVD diamond. The capabilities and limitations of the proton spectrometer will be evaluated and presented in this paper.

## **Primary experiment**

Author: MELBINGER, Julian

**Co-authors:** WEISS, Christina (Vienna University of Technology (AT)); GRIESMAYER, Erich (Vienna University of Technology (AT))

Presenter: MELBINGER, Julian

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