Contribution ID: **97**   Type: **Poster**

Novel CDB Data Processing and Evaluation Software

Tuesday 7 December 2021 10:30 (1h 30m)

The Coincidence Doppler-Broadening (CDB) spectrometer at NEPOMUC has recently been upgraded with six additional HPGe Detectors, bringing the total number of detectors to ten. To take full advantage of the even more capable instrument a novel data evaluation software package (STACS) was created.

The software can handle and visualize the data generated by Coincidence Doppler-Broadening Spectroscopy (CDBS) and provides a wide range of tools to analyze such data. Some of the main functions include the extraction of the electron-positron annihilation photo peak from CDB spectra as well as a simple background subtraction algorithm that is able to increase the peak-to-noise ratio of the extracted photo peak further. For the first time it is possible to combine the data from multiple detector pairs, improving measurement statistics. The modular design of the software makes it easy to adapt for future instrument upgrades or even other instruments. Over all the STACS package paired with the upgraded spectrometer is able to perform highly sensitive defect studies or precipitate analysis in solid materials.

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Session Classification: Poster Session

Track Classification: Positrons