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PETRA IV: Frontend design

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New frontends are required to upgrade the PETRA accelerator to the 4th generation. The design is based on the original design concept developed for the photon beamline frontends at PETRA III. The newly designed frontends aimed at using the same proven components and minimizing of the number of girder variations. In addition, a lot of the old components (complete girder) can be used for the new beamlines. A total of 36 new frontends are required for the PETRA IV project, which are divided into the types of 28 Frontends for single beamlines, 6 Frontends for 5 mrad canting and, 2 Frontends for 1.5 mrad canting. The frontends will be installed over four different experimental halls, so that the last part of the system has to be adapted accordingly. On the accelerator girder, the frontend is assembled as a complete string to minimize assembly times on the accelerator girder. Furthermore, the calibration of individual components prior to installation enables a substantial reduction in measurement and set-up times on the accelerator girder. A further benefit is that the entire assembly of the individual strings can be carried out in a cleanroom environment.

Footnotes

Funding Agency

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