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Status of the Bonn Isochronous Cyclotron

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The Bonn Isochronous Cyclotron provides proton, deuteron, alpha and other light ion beams with a charge-to-mass ratio $Q/A \geq 1/2$ and kinetic energies ranging from 7 to 14 MeV per nucleon. The beam is guided through a high-energy beam line (HEBL) to one of five experimental sites. The installation of the irradiation site for high-uniformity radiation hardness tests of Si detectors is now complete. Additionally, a neutron irradiation site will be commissioned soon. Here, a collimated neutron beam, generated by a stripping reaction of the deuteron beam in a carbon target, can be used for irradiation. To provide stable beam with constant optics for these experiments, the power supplies (PS) of all magnets in the HEBL will be replaced. The replacements must meet strict criteria regarding output current's stability, which were derived from measurements of the existing PS. In this spirit, a new corrector magnet PS system, enabling bipolar operation, PS/magnet operation safety/health and power consumption monitoring, is close to commissioning. Additionally, the cyclotron's extraction septum is upgraded to increase operation robustness. Here, a new antiseptum is designed together with a new septum blade holder, which is intended to be additively manufactured with the laser- powder bed fusion technique.

Footnotes

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Paper preparation format

Region represented

Europe

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