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A study design of faraday cup for a 50 MeV electron beam current

The beam diagnostics to monitor the source performance constitutes an important part of particle accelerator. One of the key beam diagnostics is the charged particle beam current, the Faraday cup. This paper focuses on the design of Faraday cup for an electron beam energy between 5-50 MeV. For a good performance, the well-proved Monte Carlo codes of the PHITS has been performed to select the appropriate material types. The design achieved electron capture of around 99% by taking into account the penetration loss, the backscatter losses and the current leakage. The prototype Faraday cup is in the process of fabrication. The simulated results and detailed design will be presented.

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