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SP10: Investigation of electronic noise of the charge measuring system at PITZ

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The Photo Injector Test facility at DESY, Zeuthen site (PITZ) develops high brightness electron sources for modern linac-based Free Electron Lasers (FELs). A precise measurement of electron beam (e-beam) charge is essential. Several Faraday Cups (FCs) and Integrating Current Transformers (ICTs) are installed along the PITZ beamline to measure the e-beam charge. In order to improve the accuracy of the e-beam charge measurement at PITZ, causes of the measurement error are investigated. It's found that the measurement error for ICTs is dominated by the electronic noise. An unknown 300 kHz harmonic which makes a significant contribution to the measurement error is observed. The source of the 300 kHz noise is investigated and presented, as well as the solutions.

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