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## DCCT noise and beam lifetime measurement

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Beam lifetime measurements are an important tool to characterize the key storage ring and machine performance parameters. They are usually derived from the dc current transformer (DCCT) data, and their accuracy depends on DCCT noise and data duration period. However, accurate dc current and fast lifetime determination are in contradiction and have to be balanced carefully. In this contribution, a model is presented which relates the relative accuracy in lifetime determination and the DCCT noise with the acquisition time. For the PETRA IV project at DESY (Hamburg, Germany) which aims to upgrade the present PETRA III synchrotron into an ultra low-emittance source, according to this model a lifetime determination to the level of 1% should be possible within 5-6 s acquisition time.

### Footnotes

### Funding Agency

### I have read and accept the Privacy Policy Statement

Yes

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