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Beam dynamics studies and vacuum diagnostics in the Solaris storage ring

Monday 2 June 2025 16:00 (2 hours)

Since 2015, the National Synchrotron Radiation Center SOLARIS has operated a light source supporting eight experimental beamlines. Following vacuum chamber replacements and beamline upgrades, the total beam lifetime at 400 mA has reached 13 hours in decay mode operation. Regular lifetime measurements are conducted to monitor vacuum quality, residual gas composition, and potential stability issues arising from machine aging. Beam dynamics studies involve measuring electron beam lifetimes at 400 mA, 300 mA, and low currents (as low as 10 mA) under both multibunch and single-bunch operating modes. A particular focus is placed on intra-beam electron interactions influencing the Touschek lifetime and the effects of residual gas on beam scattering. These investigations provide valuable insights into vacuum performance, electron bunch behavior, and overall storage ring dynamics.

Footnotes

Paper preparation format

LaTeX

Region represented

Europe

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