

Online tuning of storage ring non-linear dynamics at SIRIUS and fast ORM measurement

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Ms.C student

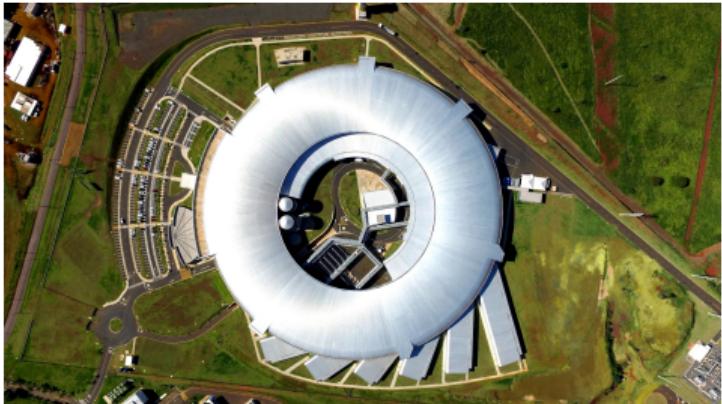
on behalf of the LNLS Accelerator Physics Group

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Accelerator Physics Group (FAC) - Brazilian Syncrhotron Laboratory (LNLS)

June 2023

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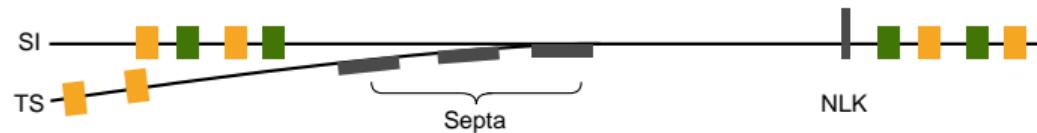
SIRIUS



- ▶ 4th generation storage ring-based synchrotron light source
- ▶ LINAC, booster, storage ring
- ▶ Storage ring: 518 m in circumf,
3 GeV, nominal energy
- ▶ 100 mA current, top-up injection mode

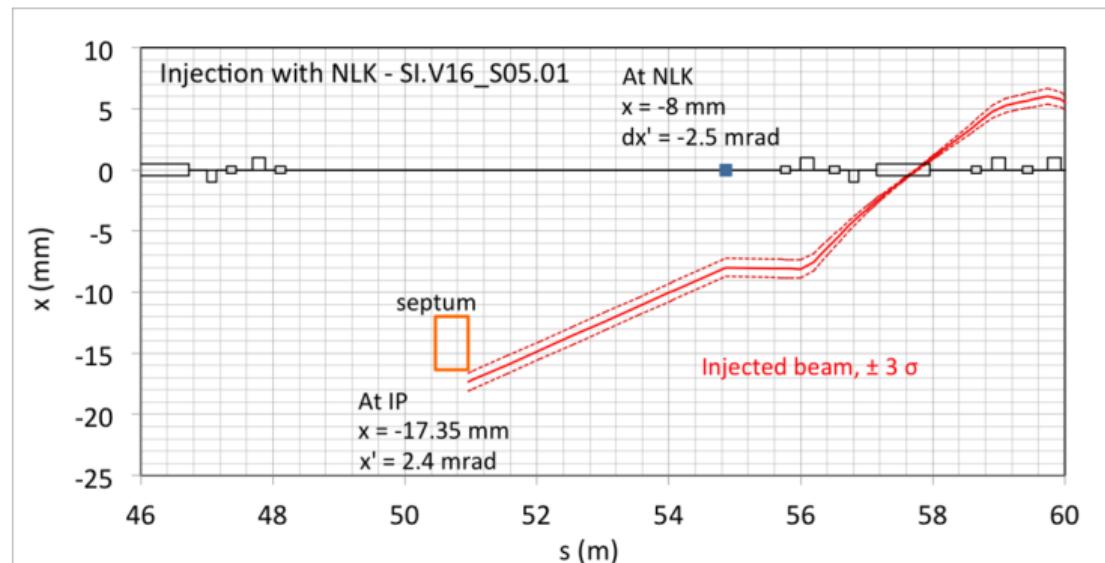
The dissertation problem

Off-axis injection scheme



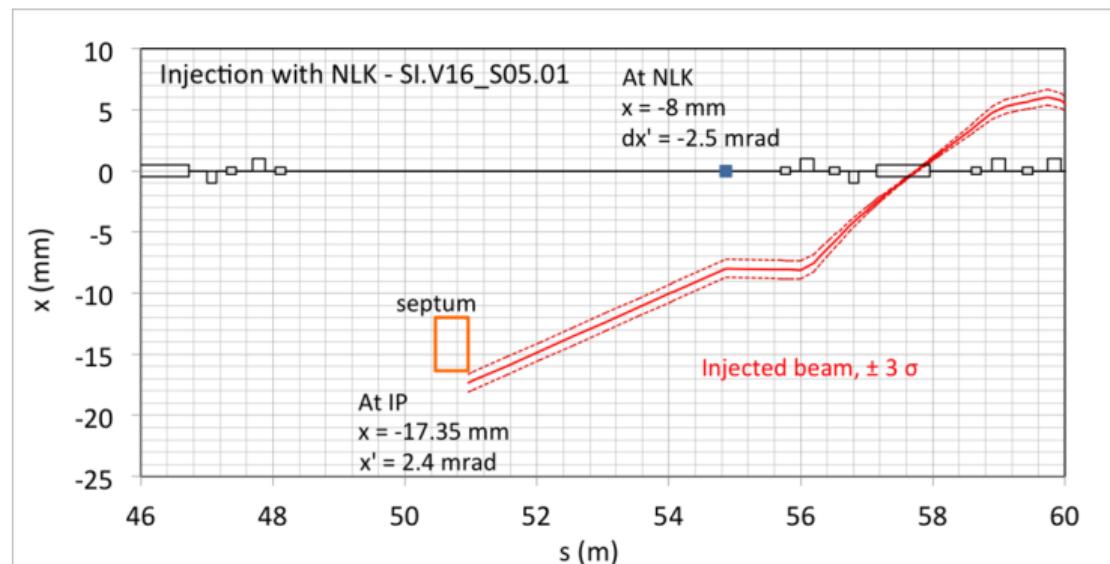
The dissertation problem

Off-axis injection scheme

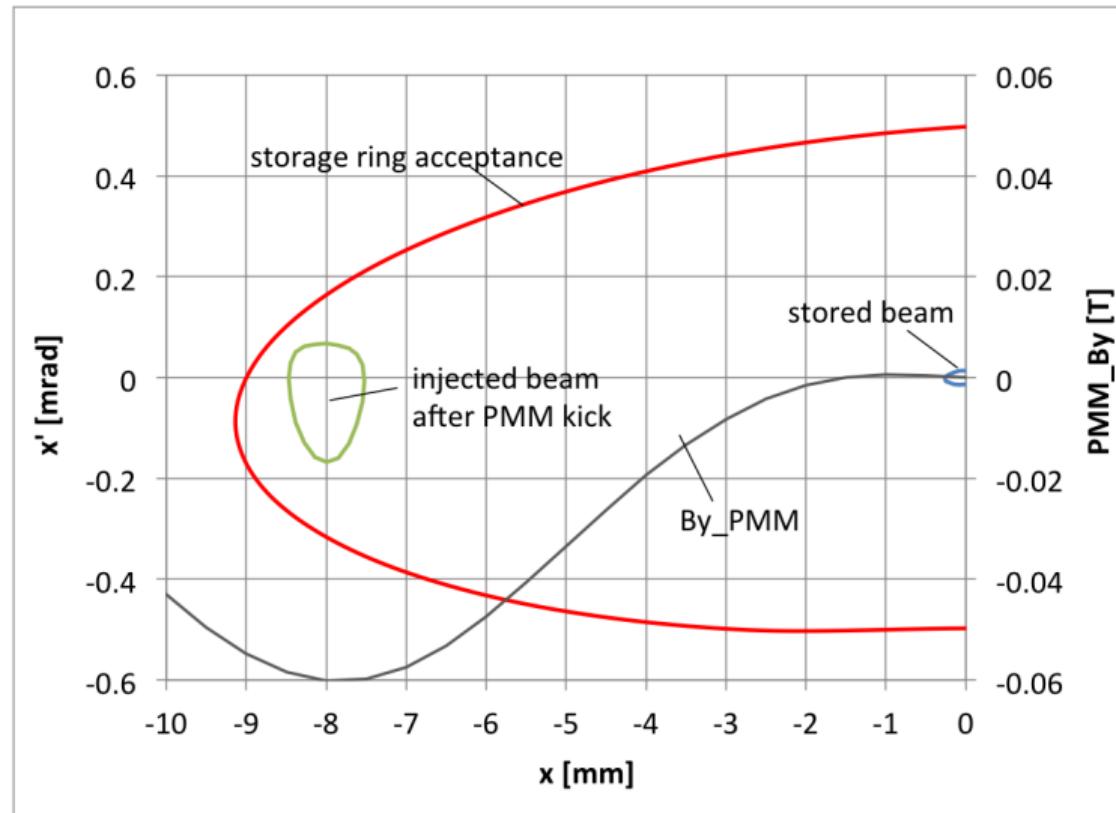


The need for a large Dynamic Aperture

Off-axis injection scheme



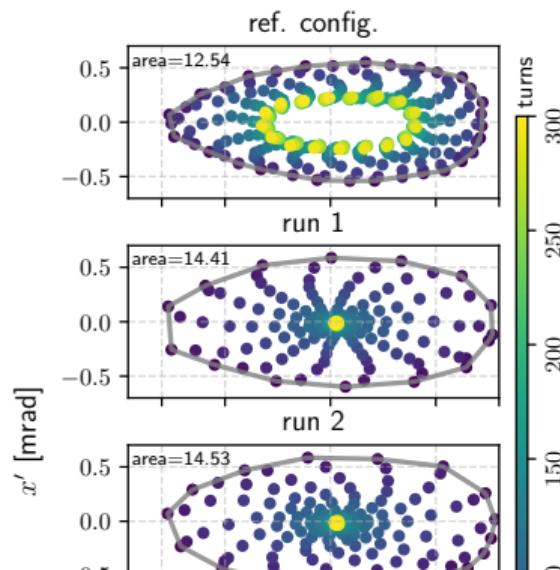
The need for a large Dynamic Aperture



SIRIUS Dynamic Aperture Optimization

Working point $\nu_x = 49.08, \nu_y = 14.14$

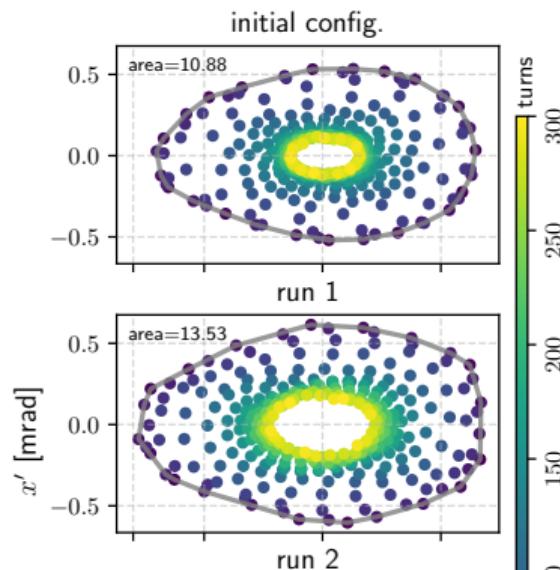
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SIRIUS Dynamic Aperture Optimization

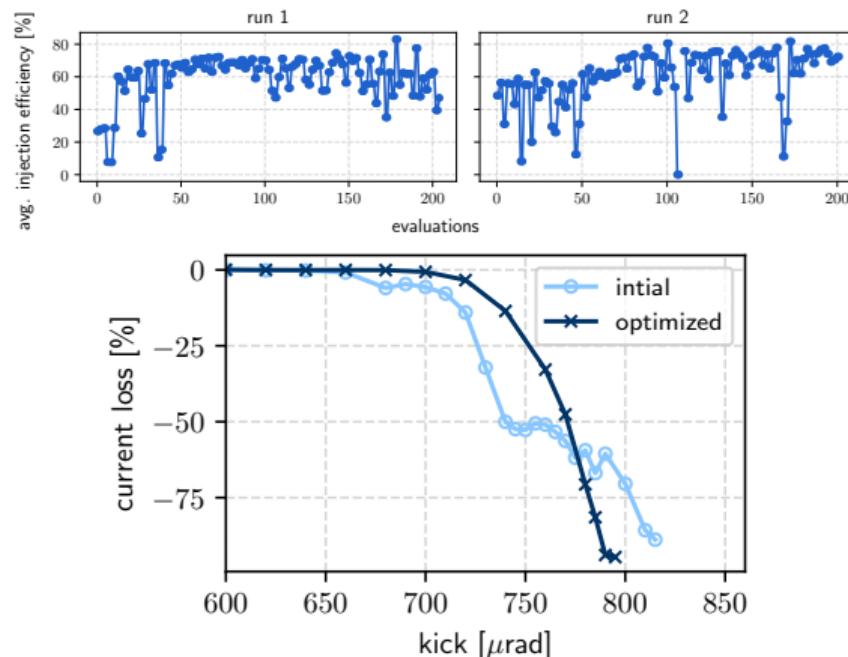
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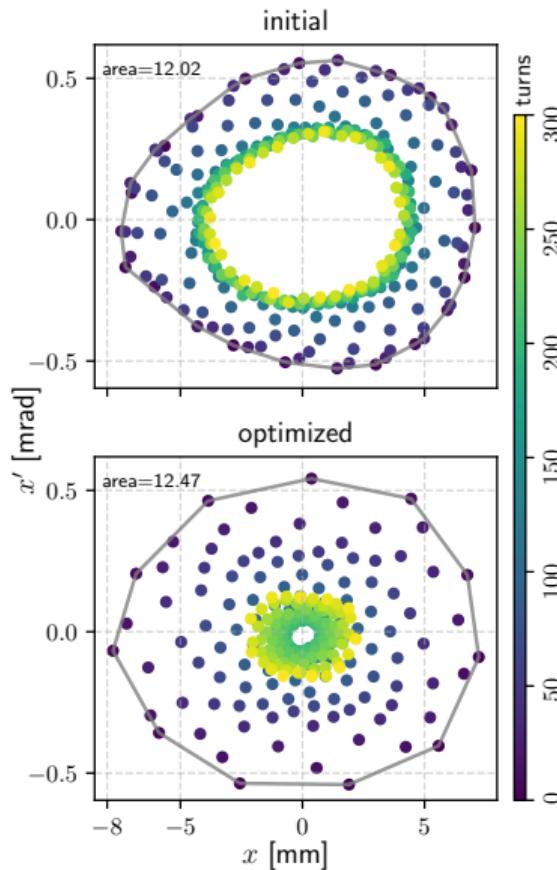


SIRIUS Dynamic Aperture Optimization

Working point $\nu_x = 49.16, \nu_y = 14.22$



- ▶ injection efficiency: $93 \pm 3\%$ run 1
- ▶ 1.5 hr reduction in lifetime



Thank you!