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## Transverse Resonant Island Buckets at the SLS

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Transverse Resonant Island Buckets (TRIBs) can be established by moving the horizontal tune close to a third order resonance. In this case the TRIBs correspond to a second stable orbit, longitudinally winding around the core orbit in the transverse  $x-x'$ -phasespace and closing after three revolutions. TRIBs provide many potential application possibilities ranging amongst others from simple bunch separation over dedicated multi-colour- or multi-polarization-experiments\* to injection/extraction to/from the island orbit. For Leptons the synchrotron radiation damping attracts excited particles on the island orbit to the island fixed point, enabling non-adiabatic methods for population of the island orbit. Modern bunch by bunch feedback systems thus enable arbitrary filling patterns of the core and island orbits. Optics for TRIBs at the SLS are implemented successfully, enabling further studies of the TRIBs and the corresponding island orbit at the SLS.

### Funding Agency

### Footnotes

- Armbrorst, F. "Transverse Resonance Island Buckets at BESSY II - A new Bunch Separation Scheme" . Doctoral Thesis, Humboldt-Universität zu Berlin, 2022. <https://doi.org/10.18452/23851> \*\* Holldack, K., Schüssler-Langeheine, C., Goslawski, P. et al. "Flipping the helicity of X-rays from an undulator at unprecedented speed". Commun Phys 3, 61 (2020). <https://doi.org/10.1038/s42005-020-0331-5>

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