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SLS Experience

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SLS storage ring optics reaches the state-of-the-art through more than ten years operation as providing high quality synchrotron light to about 20 beam lines. The linear optics has been measured with the response of the tune to small variation of quadrupole strength and corrected based on SVD. The corrected optics allows us to employ the model response matrix for the orbit correction/feedback and the linear coupling correction. The nonlinear optics has been corrected using pre-defined theoretical knobs to surppress relevant resonances. The beam life time can then be sufficiently long. One of the highlights of SLS performance is the small vertical emittance ˜2 pm thanks to the well corrected betatron coupling and vertical dispersion with dispersive and non-dispersive skew quadrupoles. Recently, we introduced two more optics measurements, namely LOCO and turn-by-turn BPM. The idea is to compare the results from independent measurements. This resulted in better understanding the machine and we achieved further small vertical emittance <2 pm. Girder re-alignment is also underway to challenge even smaller vertical emittance for future accelerators.

Presenter: AIBA, Masamitsu (Unknown)

Session Classification: Experience from light sources and damping rings