Contribution ID: **2836** Contribution code: **SUPM095** Type: **Poster Presentation**

Lifetime without Compromise

Sunday, 7 May 2023 16:00 (2 hours)

Diffraction-limited light sources have garnered significant interest – yet the smaller equilibrium size of their electron bunches also reduces the beam-lifetime. One remedy is to vertically excite the electron beam, for instance using a Multi Bunch Feedback (MBF) system. Previous work has demonstrated that this approach can safely increase the vertical emittance, thus beam-lifetime. However, not all operational vertical emittances are created equal. Driving the beam at frequencies near resonances can generate large coherent beam-centroid motion that results in an enlarged apparent photon-source. In this work, we present a methodology, justified with theoretical reasoning and simulation, that finds the optimal combination of frequency and kick strength that satisfies both the operational requirements and the beamline interests. The methodology is then demonstrated for the Diamond-II lattice, including short-range wake effects.

Funding Agency

STFC grant ST/W507532/1 (50%)
Diamond Light Source (50%)

Footnotes

*S. Preston et al 2022, IBIC22

I have read and accept the Privacy Policy Statement

Yes

Primary author: WILKES, Seb (University of Oxford)

Presenter: WILKES, Seb (University of Oxford)

Session Classification: Student Poster Session