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Lattice for the SOLEIL II Upgrade

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In order to continue to provide world-class capabilities and cutting-edge tools to support scientific endeavors, SOLEIL launched its upgrade program, known as SOLEIL II, in 2020. This project is based on a very aggressive accelerator design aiming at an ultra-low emittance of about 80 pm.rad at 2.75 GeV, providing a 10 \boxtimes m RMS round electron beam and more than 100 times brighter photon beams. This performance is based on the use of a circular copper vacuum chamber with an inner diameter in the arcs as small as 12 mm fully NEG coated, which enables the achievement of strong quadrupole gradients (120 T/m) and very strong sextupole strengths (8500 T/m2). These technical challenges have pushed engineering technologies to their limits and their validation has required an intensive R&D program. The project also relies on innovative developments such as a new high-performance non-linear kicker and new insertion devices together with extensive use of permanent magnets. We believe that the choices used and validated in our project represent a new paradigm in storage ring design that we would like to share at this conference.

I plan to submit also conference proceedings

No

Primary author: NADJI, Amor (SYNCHROTRON SOLEIL)Presenter: NADJI, Amor (SYNCHROTRON SOLEIL)Session Classification: Mikrosymposium 10/2: New Lattices and IDs

Track Classification: 10. New lattices and novel insertion devices