



Contribution ID: 63

Type: poster

Cryogenic Undulator Development and First Observed Radiation on COXINEL

Wednesday, 27 September 2017 19:30 (1 hour)

COXINEL project aims at demonstrating compact Free Electron Laser (FEL), using a Cryogenic Permanent Magnet Undulator (CPMU), and a laser plasma acceleration source. CPMU takes advantage of the magnet's enhanced performance at low temperature and attains a higher magnetic field, thus enabling to shorten the period and making it applicable for compact FEL applications. The undulator that is currently installed is a CPMU of period 18 mm (U18) operating at room temperature, due to infrastructure reasons, at a resonance wavelength of 200 nm. Different measurements and optimizations have been done to improve the undulator quality in terms of phase error to enhance the radiation emitted, and field integrals to prevent any beam distortion along the undulator axis. The construction of U18 undulator and the magnetic measurements needed for optimization, alongside its operation as in observation of the emitted radiation, are presented. A particular method is also introduced, using SRWE code, to compute the spectra of the large energy spread beam (few percent) taking into account the variation of the Twiss parameters for each energy slice.

Primary author: Mr GHAITH, Amin (SOLEIL)

Co-authors: Mr BRIQUEZ, Fabien (Synchrotron SOLEIL); Mr MARTEAU, Fabrice (Synchrotron SOLEIL); Dr COUPRIE, Marie-Emmanuelle (Synchrotron SOLEIL); Mr VALLEAU, Mathieu (Synchrotron Soleile); Mr MARCOUILLÉ, Olivier (Synchrotron SOLEIL); Mr BERTEAUD, Phillipe (Synchrotron SOLEIL); ANDRE, Thomas (Synchrotron SOLEIL)

Presenter: Mr GHAITH, Amin (SOLEIL)

Session Classification: Wine and Poster Session 2 (WG4-WG5-WG6-WG7)

Track Classification: WG4 - Applications of Compact and High-Gradient Accelerators