Contribution ID: **908** Type: **Invited talk**

Beam commissioning and user operation of NanoTerasu accelerator system

Tuesday 27 August 2024 16:50 (20 minutes)

NanoTerasu is a medium-sized highly brilliant SX and Tender X-ray storage ring light source built on a green-field. The NanoTerasu accelerator system consists of a 3 GeV storage ring based on four bends achromat lattice with a circumference of 349 m and a 3 GeV linear injector accelerator with length of 110 m. The compact accelerator system contributed to significant cost reduction of construction and operation of NanoTerasu facility. The installation of the accelerator system started in Dec. 2021 and successfully finished by the end of May 2023. The commissioning of NanoTerasu accelerator system started in Apr. 2023 and the first electron beam store was achieved in Jun. 2023. The commissioning of insertion devices (IDs) and beam lines in experimental hall started in Sep. 2023 and Dec. 2023, respectively. The first user operation at NanoTerasu was performed from Apr. 9th to 21st ,2024 for 296 hours. The stored beam current was 160 mA at top-up mode with uniform 400 bunches. A typical lifetime during user operation was 10 hours with initial 10 IDs under operation. The horizontal beam emittance is close to 1.1 nm.rad monitored with an X-ray pinhole camera system. Seven beamlines were used for various user experiments such as an X-ray coherent imaging and SX spectroscopy. The other three beamlines were under commissioning during the user operation. The total scheduled user time in the fiscal 2024 is 3500 hours. In this talk, the commissioning and user operation of NanoTerasu accelerator system will be presented.

I plan to submit also conference proceedings

Yes

Primary author: NISHIMORI, Nobuyuki (National Institutes for Quantum Science and Technology)

Co-authors: Dr ASAKA, Takao (National Institutes for Quantum Science and Technology); Dr UESHIMA, Kota (National Institutes for Quantum Science and Technology); Dr HOSAKA, Yuji (National Institutes for Quantum Science and Technology); Dr OBARA, Shuhei (National Institutes for Quantum Science and Technology); Dr KAN, Koichi (National Institutes for Quantum Science and Technology)

Presenter: NISHIMORI, Nobuyuki (National Institutes for Quantum Science and Technology)

Session Classification: Mikrosymposium 11/2: SR facilites: Updates and New Facilities

Track Classification: 11. Synchrotron radiation facilities: Facility updates and new facilities