IPAC'23 - 14th International Particle Accelerator Conference



Contribution ID: 558 Contribution code: TUPA028

Type: Poster Presentation

Low-emittance SRF photo-injector prototype cryomodule for the LCLS-II high-energy upgrade: design and fabrication

Tuesday, 9 May 2023 16:30 (2 hours)

The high-energy upgrade of the Linac Coherent Light Source II (LCLS-II-HE) will extend the X-ray energy range up to 20 keV. The goal is to produce low emittance (0.1 mm·mrad) electron bunches (100 pC/bunch) and accelerate 30 μ A beams through the superconducting linac to 8 GeV. A low-frequency superconducting radio-frequency photo-injector (SRF-PI) will be a key aspect of the upgrade. An SRF-PI cryomodule with a 185.7 MHz Quarter-Wave Resonator (QWR) for operation at a cath-ode field of 30 MV/m and a cathode system compatible with high quantum efficiency photo-cathodes operating at 55-80 K or 300 K are currently being developed. We report on the design and fabrication status of the SRF-PI cryomodule and cathode system for LCLS-II-HE.

Funding Agency

Department of Energy Contract DE-AC02-76SF00515

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary author: XU, Ting (Facility for Rare Isotope Beams)

Co-authors: ARNOLD, Andre (Helmholtz-Zentrum Dresden-Rossendorf); ADOLPHSEN, Chris (SLAC National Accelerator Laboratory); CHANG, Wei (Facility for Rare Isotope Beams); CHOI, Yoonhyuck (Facility for Rare Isotope Beams); COMPTON, Chris (Michigan State University); COY, Robert (SLAC National Accelerator Laboratory); DU, Xiaoji (Facility for Rare Isotope Beams, Michigan State University); GATZMAGA, Stefan (Helmholtz-Zentrum Dresden-Rossendorf); GREENE, David (Facility for Rare Isotope Beams); HARTUNG, Walter (Facility for Rare Isotope Beams, Michigan State University); JI, Fuhao (SLAC National Accelerator Laboratory); KELLY, Michael (Argonne National Laboratory); KIM, Sang-Hoon (Facility for Rare Isotope Beams, Michigan State University); KONOMI, Taro (Facility for Rare Isotope Beams, Michigan State University); LEWELLEN, John (Los Alamos National Laboratory); MILLER, Samuel (Facility for Rare Isotope Beams, Michigan State University); MORRIS, Dan (Facility for Rare Isotope Beams); MURCEK, Petr (Helmholtz-Zentrum Dresden-Rossendorf); MUR-PHY, Matthew (SLAC National Accelerator Laboratory); PATIL, Mohit (Facility for Rare Isotope Beams, Michigan State University); PETERSEN, Troy (Argonne National Laboratory); PIOT, Philippe (Northern Illinois University); POPIELARSKI, Laura (Facility for Rare Isotope Beams, Michigan State University); SAITO, Kenji (Facility for Rare Isotope Beams); SMEDLEY, John (SLAC National Accelerator Laboratory); TEICHERT, Jochen (Helmholtz-Zentrum Dresden-Rossendorf); WEI, Jie (Facility for Rare Isotope Beams, Michigan State University); XI-ANG, Rong (Helmholtz-Zentrum Dresden-Rossendorf); XIAO, Liling (SLAC National Accelerator Laboratory); YIN, Ziye (Facility for Rare Isotope Beams, Michigan State University)

Presenters: XU, Ting (Facility for Rare Isotope Beams); XIANG, Rong (Helmholtz-Zentrum Dresden-Rossendorf)

Session Classification: Tuesday Poster Session

Track Classification: MC2: Photon Sources and Electron Accelerators: MC2.T02: Electron Sources