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C2Or4A-04: Cryogenic System for the High Energy Photon Source At IHEP

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High Energy Photon Source (HEPS) is a high-performance and high-energy synchrotron radiation light source with a beam energy of 6GeV and an ultra-low emittance of better than 0.06nm×rad. HEPS is mainly composed of accelerator, beamlines and end-stations, which would provide the synchrotron beam with will brilliance higher than 1×1022 phs/s/mm2/mrad2/0.1%BW. No less than 90 high performance beamlines and end-stations are capable to be built around the storage ring., the circumference of the store ring is 1.36km. A large cryogenic system has been built for the HEPS, which includes a helium cryogenic system and a nitrogen cryogenic system. The helium cryogenic system is used to cool down five 166.6MHz superconducting cavity cryomodules and two 499.8MHz superconducting cryomodules in the first phase, and in second phase another three cryomodules will be added, the distance from the first to the end cryomodule is around 200 meters, the total cooling capacity of the helium refrigerator is 2000W@4.5K. The nitrogen cryogenic system is used for the precooling of helium refrigerator, thermal shield for the cryogenic transfer line and the cryomodules, cool down of the cryogenic permanent magnet undulator and cryogenic monochromator,the total cooling capacity of the nitrogen system is around 45KW@80K.The project of HEPS will be finished in the end of 2025, the whole cryogenic system nearly to be finished and had been put into use for machine commissioning.

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