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Conceptual design of the cryogenic distribution system for the Shenzhen superconducting soft X-ray free electron laser

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The Shenzhen Superconducting Soft X-ray Free Electron Laser (S3FEL) accelera-tor is based on the TESLA type superconducting RF cavity technology. It consists of 26 1.3 GHz cryomodules and 2 3.9 GHz cryomodules, which can produce 2.5GeV free electron laser and operate in continuous wave mode. Three cryogen-ic systems, namely Test Facility CryoPlant (TFCP), Prototype Accelarator Cry-oPlant (PACP) and Accelarator CryoPlant (ACCP) will be constructed to support the S3FEL. This paper will mainly introduce the preliminary design of these three cryogenic distribution systems.

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