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Operation of Diamond Light Source RF Cavities

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In past two years, we have experienced two serious failures of our SRF cavities. Cavity 2 developed a leak from the helium can into cavity UHV and the RF window assembly of cavity 4 failed after just 10 months' operation. The UHV leak repair is on-going but the RF window was swapped with a spare in a clean room on site and cavity 4 has been subsequently tested to over 2 MV. The impact of cavity failure on machine operation and the long repair time of the UHV leak has led to the proposal for a combined configuration of normal conducting cavities and SRF cavities for the storage ring. We are also working to upgrade our LLRF system from analogue to digital. This will enable us to address issues such as probe blips, cavity conditioning and fault diagnosis. This system will be deployed for both storage ring and booster cavities.

Summary

Primary author: GU, Pengda

Presenter: GU, Pengda

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