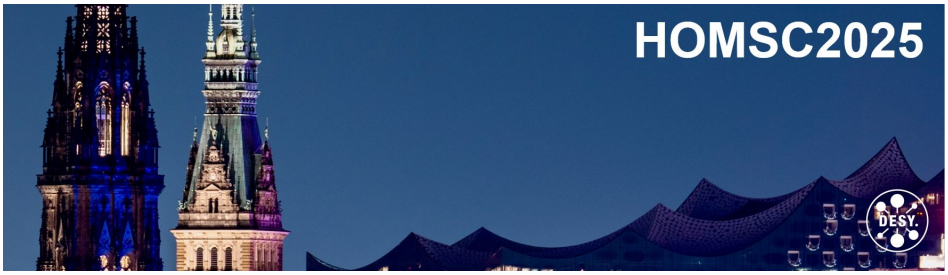

Contribution ID: **2** Type: **Oral contribution**

HOM Damping in 166MHz beta=1 QWR for High Energy Photon Source

Tuesday 7 October 2025 14:00 (30 minutes)

The High Energy Photon Source is a 6 GeV diffraction-limited synchrotron light source with ultra-low beam emittance. A 166.6 MHz quarter-wave superconducting cavity with a beta=1 structure has been proposed as the main accelerating cavity for the storage ring. The high beam current of 200 mA requires heavy damping of higher order modes (HOM) in the 166.6 MHz cavities to avoid coupled multi-bunch instabilities. The low HOM frequencies and the limited space of the straight sections for cavities pose significant challenges for the HOM damping design. Several design concepts have been exploited, combining dedicated HOM couplers for the first few HOMs and a beam-line HOM absorber for the remaining high-frequency modes. An enlarged beampipe scheme has also been examined, featuring a large ferrite HOM absorber on the beam line. The design optimizations and limitations of these damping schemes are elaborated and compared. This talk presents the design of the HOM damping schemes in the 166.6 MHz superconducting cavities. The HOM-damped 166.6 MHz cryomodules have been tested and are scheduled to be installed on the storage ring for beam operation in the summer. The testing and operational status will also be discussed.

Primary author: ZHENG, Hongjuan (IHEP)

Presenter: ZHENG, Hongjuan (IHEP)

Session Classification: Design of SRF Cavities and HOM Damping Schemes

Track Classification: Design of SRF Cavities and HOM Damping Schemes