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Copper vacuum chamber of HALF storage ring coated with NEG

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The premise of the stable operation of charged particles in the accelerator storage ring is a stable and clean vacuum environment, and the level reached by the vacuum system is directly related to beam intensity, beam quality and beam lifetime. Therefore, the design of vacuum system is an indispensable part of accelerator engineering. HALF is a fourth generation advanced synchrotron radiation light source in low energy region. The beam emittance in the storage ring reaches the diffraction limit. At present, the circumference of the storage ring as the main body of HALF is 480m and is set to 20 cycles. According to the characteristics of the fourth generation light source storage ring, such as small vacuum chamber space, large calorific value, small flow conductivity of the storage ring and limited effective pumping speed of the vacuum pump, the alloy copper with high strength, good thermal conductivity and non-magnetic should be selected as the main material of the ring vacuum chamber. At the same time, the exhaust of intermittent sputtering ion pump can not meet the requirement of vacuum, so the inner surface of copper vacuum chamber of storage ring must be coated with NEG film.

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