

## 8 - 27 SSC Vacuum Performance Improvement

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The vacuum system for SSC<sup>[1]</sup> was built in 1986, which has the characteristics of large volume (about 100 m<sup>3</sup>), large number of components, complex system, *etc.* SSC vacuum performance has degraded after a long time of operation.

Improving SSC vacuum performance will reduce beam losses and greatly improve the beam extraction efficiency. SSC vacuum level has been increased from the order of 10<sup>-6</sup> to 10<sup>-8</sup> mbar after a series of modification measures, which greatly improves the operating environment of the beam. The specific improvement measures of the SSC vacuum system are as follows (Figs. 1 and 2):

(1) By increasing the pumping speed to increase the vacuum level of SSC, the main measure is to increase the number of cryogenic pumps from 8 to 12.

(2) By reducing the gas loading to increase the vacuum of SSC, the main method is to carry out comprehensive vacuum leak detection of SSC cavity and cleaning of the cavity.



Fig. 1 (color online) SSC vacuum system cryopump installation.

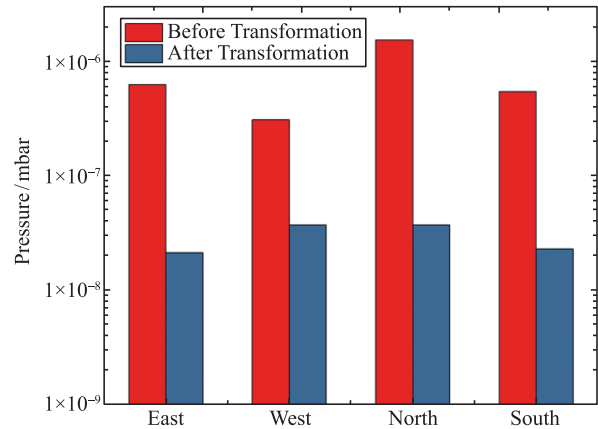


Fig. 2 (color online) SSC vacuum before and after the improvement.

### Reference

- [1] X. T. Yang, W. S. Yang, Current Situation and Progress of HIRFL Vacuum System[C]// The First Particle Accelerator Vacuum and Cryogenic Technology Seminar. Chinese Physical Society, (2009).