



Contribution ID: 1249 Contribution code: TUPS23

Type: **Poster Presentation**

## Commissioning of 160 kW beam power for the CSNS RCS

*Tuesday, 21 May 2024 16:00 (2 hours)*

For the China Spallation Neutron Source (CSNS), the rapid cycling synchrotron (RCS) accumulates and accelerates the injection beam to the design energy of 1.6 GeV and then extracts the high energy beam to the target. In this paper, the commissioning of 160 kW beam power for the CSNS RCS have been comprehensively studied, including: increase of the pulse width for the injection beam to optimize the horizontal painting, commissioning of the two dual harmonic RF cavities, installation of four new octupoles to reduce the beam instability, optimization of the transverse and momentum collimators, local orbit correction. In order to meet the requirements of beam power increase and stable operation of the accelerator, the RCS beam losses from different sources are studied and optimized. With the aid of weekly radiation dose measurement, the hot spots of the RCS are studied in depth to explore the causes and find the solutions.

### Footnotes

### Funding Agency

This work is jointly supported by the National Natural Science Foundation of China (No. 12075134) and the Guangdong Basic and Applied Basic Research Foundation (No. 2021B1515120021).

### Paper preparation format

Word

### Region represented

Asia

**Primary author:** HUANG, Ming-Yang (Institute of High Energy Physics)

**Co-authors:** PENG, Jun (Institute of High Energy Physics); XU, Shouyan (Dongguan Neutron Science Center); LU, Xiaohan (Institute of High Energy Physics); HUANG, Liangsheng (Institute of High Energy Physics); LI, Zhiping (Dongguan Neutron Science Center); LIU, Hanyang (Institute of High Energy Physics); AN, Yuwen (Institute of High Energy Physics); LI, Yong (Dongguan Neutron Science Center); CHEN, Jianliang (Chinese Academy of Sciences); ZHOU, Kai (Institute of High Energy Physics); HAN, Yanliang (Institute of High Energy Physics); YUAN, Yue (Institute of High Energy Physics); YUAN, Yaoshuo (Institute of High Energy Physics); LIU, Huachang (Dongguan Neutron Science Center); LI, Xiao (Institute of High Energy Physics); ZHANG, Yuliang (Chinese Academy

of Sciences); QI, Xin (Chinese Academy of Sciences); WANG, Sheng (Institute of High Energy Physics, CAS); LI, Jintao (Institute of High Energy Physics)

**Presenter:** LI, Jintao (Institute of High Energy Physics)

**Session Classification:** Tuesday Poster Session

**Track Classification:** MC4: Hadron Accelerators: MC4.A14 Neutron Spallation Facilities