



Memo

Date: September 19, 2018
To: Wen Hu, Stuart Wilkins, and Paul Zschack
From: Zhong Zhong (chair), Photon Science Radiation Safety Committee
Subject: Review of the radiation safety configuration of the new CSX holography endstation at the CSX beamline

Dear Wen, Stuart, and Paul

The Photon Science Radiation Safety Committee (RSC) reviewed the design of the new CSX holography endstation (to be installed at the CSX beamline) on July 17. Subjects reviewed include synchrotron radiation shielding analysis, design and configuration control of the new synchrotron beamstop.

Written documents

The following documents and drawings were reviewed:

1. Presentation "CSX- Holography Chamber", by Wen Hu, Claudio Mazzoli and D.M. Bacescu, dated July 17, 2018.
2. Memo from Mo. Benmerrouche dated July 17 to the RSC chair describing the shielding calculation of the holography chamber beamstop.

Oral Presentation

Attendance: Daniel Bacescu, Andi Barbour, Mo Benmerrouche, Sunil Chitra, Wen Hu, Steve Hulbert, Wah-Keat Lee, Chuck Schaefer, Chris Stelmach, Lutz Wiegart, Emil Zitvogel, and Joe Zipper

Wen Hu gave the presentation entitled "CSX- Holography Chamber ". Following the guideline from the memo by Paul Zschack to the RSC on May 29, 2014, the following were discussed:

1. CSX beamline has been reviewed by the RSC before in 2014. The beamline has been in safe operation for about 4 years. Currently the beamline terminates at the TARDIS chamber which receives synchrotron soft x-rays. Being a soft x-ray beamline, current beamstop is a 2.75-inch blank conflat flange.
2. The RSC recommended approval of the beamline as a soft x-ray beamline. Thus, adding an extra experimental end chamber into the existing monochromatic section on the experimental floor is largely covered by our prior review.

3. The new Holography chamber will be attached to the end of the TARDIS chamber. The chamber wall thickness is sufficient for shielding against scattered soft x-rays.
4. The beamstop for the holography chamber can be either a FCCD detector or a blank flange (when the FCCD is not installed). Both are adequate for shielding the direct synchrotron soft x-rays entering the chamber, as demonstrated by Mo's memo.
5. The holography chamber will have dual vacuum switches that turns off the beam when the chamber is vented. These will be integrated into the existing PPS system at the CSX beamline.
6. Configuration control of the FCCD detector is discussed.

Notes

1. In a follow-up meeting, the RSC chair met with the CSX holography team, the safety team, and NSLS-II management to further discuss strategy for configuration control of the beamstop.
2. Since the risk of radiation exposure is extremely low, we note that the commissioning survey of the chamber can be performed at normal ring current.

Recommendations

There are no recommendations from the RSC at this time.

Conclusions

Based on our assessment of the CSX chamber configuration, and simulation results, the RSC finds that the new CSX holography chamber design meets the NSLS-II shielding policy. Subject to experimental verification by radiation survey, we believe the installed chamber and beamstop will provide adequate personnel protection for normal operation and against failures of synchrotron orbit.

Radiation Safety Committee

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