22-BM Research and Development (R&D) Endstation

IRR Functional Description

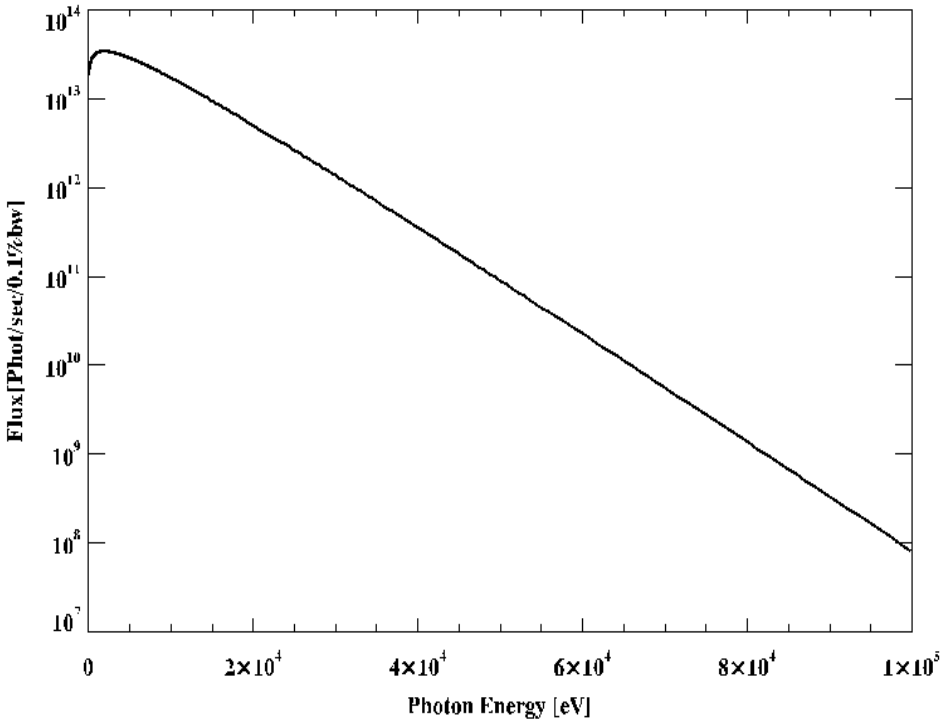
Contents

1 INTRODUCTION

The endstation at Cell 22 consists of a motorised optical table capable of 10cm motion in all directions. This will be used as a platform to support user equipment, which will be different for each experiment. Each experiment will be the subject of a separate Safety Approval Form (SAF).

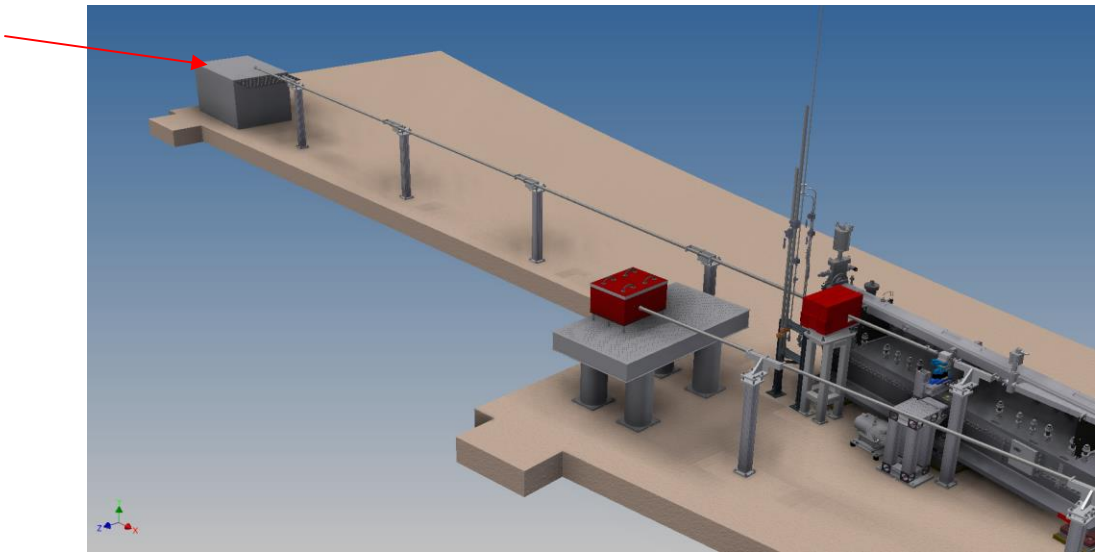
1.1 Primary Research Capabilities

Experiments to be performed are concerned with characterizing the performance of a range of x-ray detectors and x-ray optical systems developed by the NSLS-II Detector Development Group or other NSLS-II staff members needing to perform such tests. The beamline receives radiation from a 3-pole wiggler of standard design. The spectrum available for experiments from such a source is shown below, and indicates that experiments should be possible from 5keV up to around 100keV, depending on the intensity requirements of the experiment.



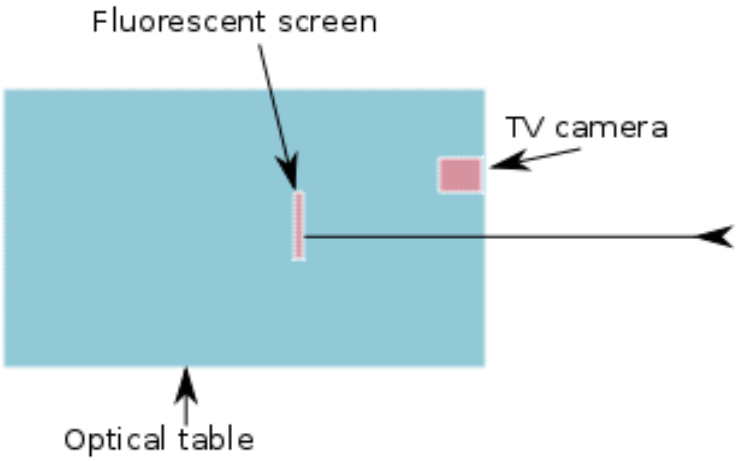
2 BEAMLINE DESIGN AND COMPONENTS

The beamline layout is shown below. This document is primarily concerned with the R&D Endstation, indicated by the red arrow. The upstream components are part of the Diagnostics capability and have been described in a separate document.



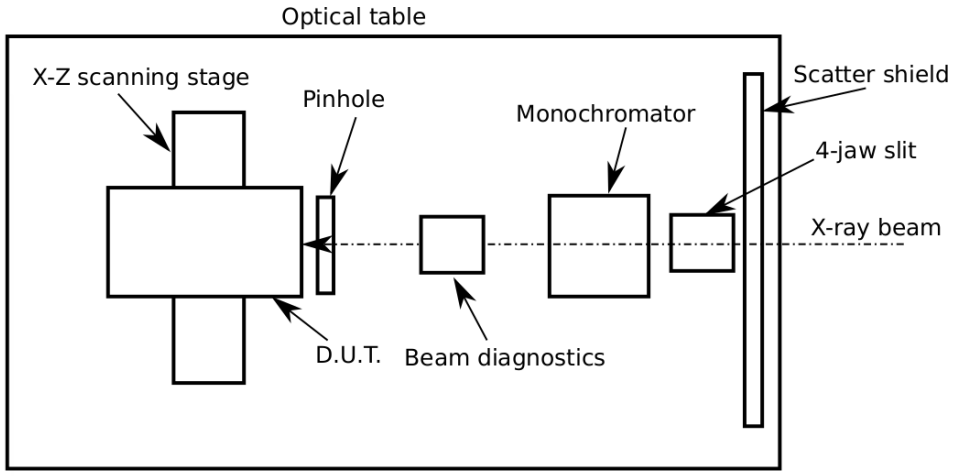
3 COMMISSIONING

Commissioning consists of simply removing the Diagnostics instrumentation from the beam path and verfying that the full beam passed by the storage ring aperture is visible at the endstation. This is achieved by observing a scintillation screen mounted on the table with a remotely-operated TV camera. The layout is sketched below.



4 SCIENTIFIC PROGRAM

Experiments to be performed are concerned with characterizing the performance of a range of x-ray detectors and x-ray optical systems developed by the NSLS-II Detector Development Group or other NSLS-II staff members needing to perform such tests. A typical experiment might require apertures to limit the beam size, simple monochromators to provide single-energy beams and a manipulator to position the detector in the beam. The figure below gives a suggestion of how such an experiment might be set up. The components shown there are for example only, and are not the subject of this review.



4.1 Beamline Staff

Lead Beamline Scientist	Dr. Peter Siddons	
Authorized Beamline Staff	Dr. A.K. Rumaiz	Beamline Scientist
	A. Kuczewski	Beamline Scientist

5 BEAMLINE SAFETY

5.1 Radiation Shielding

The entire beamline is contained within the storage ring tunnel. As a result, there are no additional radiation shielding requirements beyond those of the storage ring itself. Since there is no access to the endstation during Operations, there is no PPS system.

6 INSTRUMENT READINESS

The motion controls for the optical table have been tested and the TV camera has been tested. There are no other controls.