



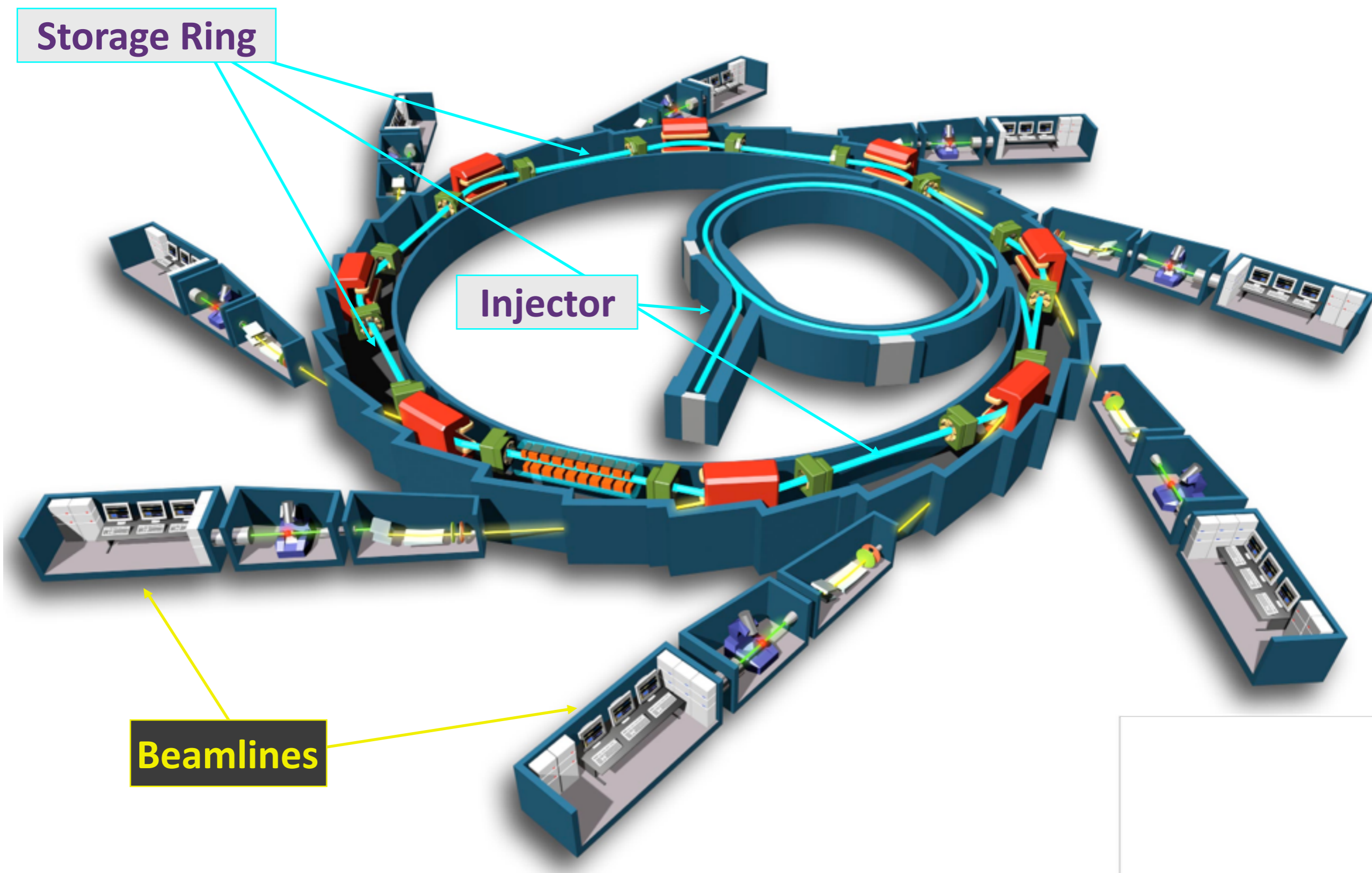
SESAME

SESAME

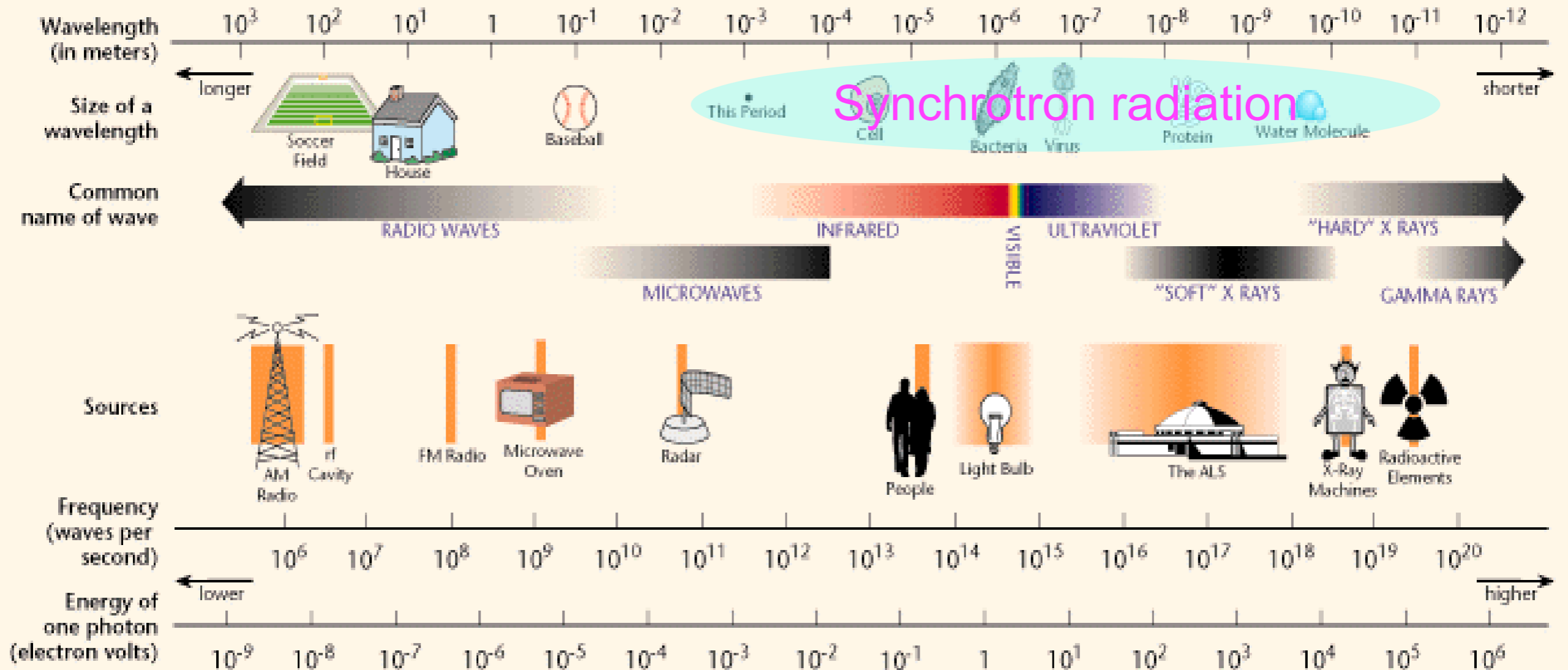
**Synchrotron-light for Experimental Sciences
and Applications in the Middle East**

**Giorgio Paolucci
Scientific Director - SESAME**

A synchrotron light source

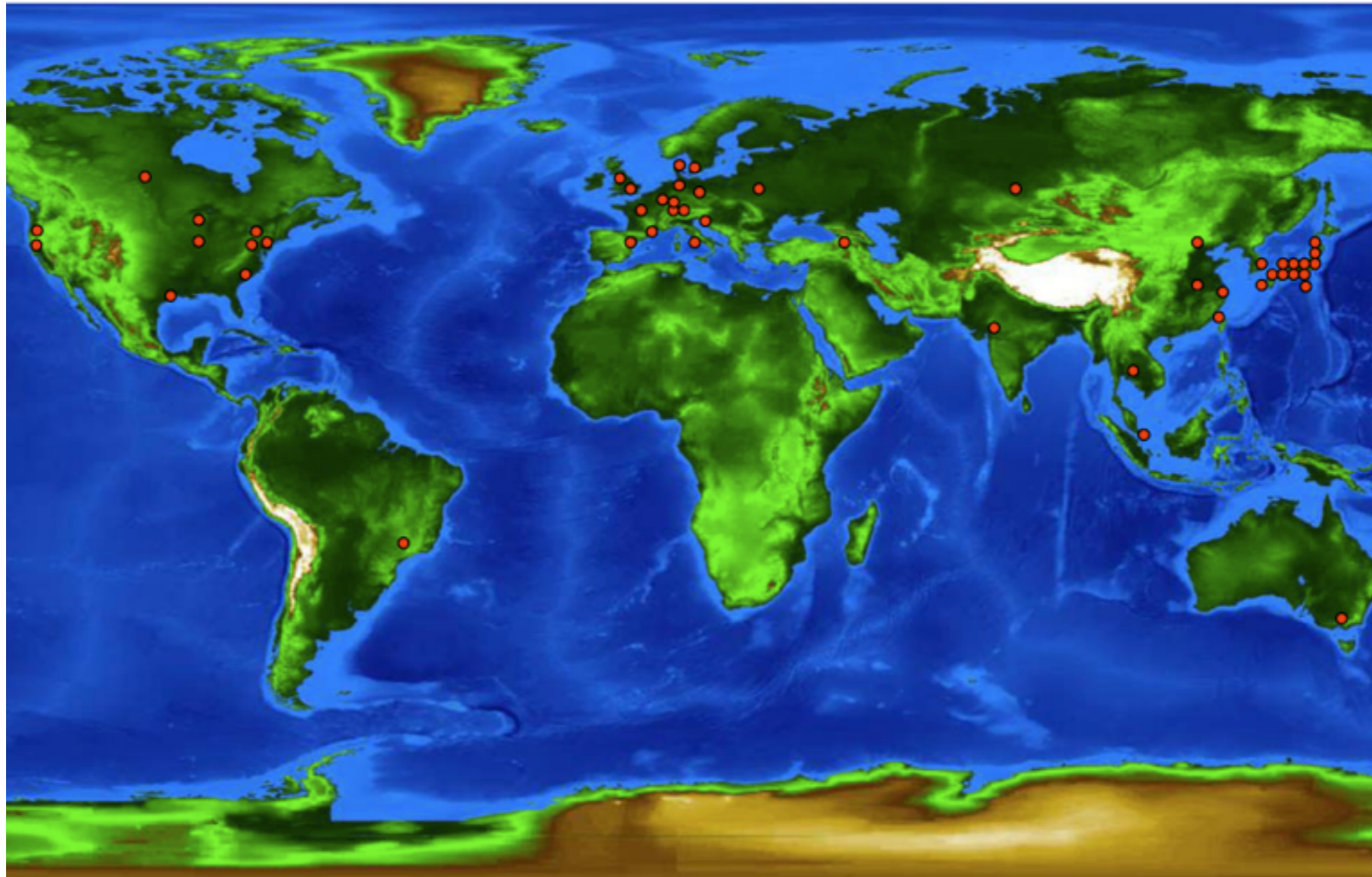


THE ELECTROMAGNETIC SPECTRUM

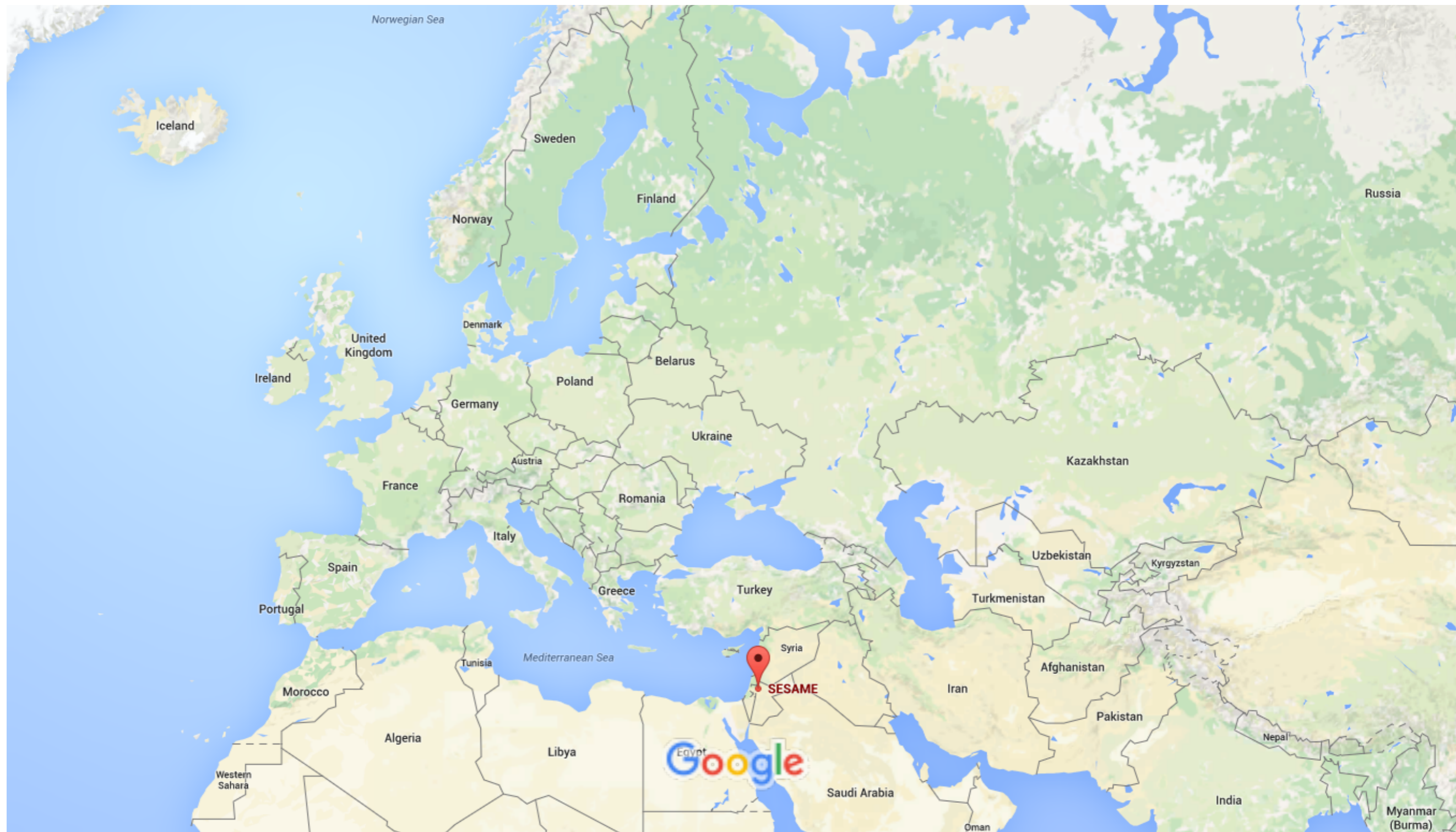


Synchrotron radiation

Distribution of SR sources



SESAME is in Jordan



Map data ©2015 Google, INEGI 500 km

Location of SESAME



SESAME location in Allan, Jordan

The Laboratory



SESAME Members & Observers



Members: Cyprus, Egypt, Iran, Israel, Jordan, Pakistan, Palestinian Authority, Turkey.

Observers: Brazil, Canada, China (People's Republic of), the European Union, France, Germany, Greece, Italy, Japan, Kuwait, Portugal, Russian Federation, Spain, Sweden, Switzerland, the United Kingdom, the United States of America.

Objectives:

- Foster excellence in science and technology in the Middle East.
- Reverse brain drain in the region.
- Enhance regional science and technology infrastructure.
- Contribute to improved understanding among peoples of diverse backgrounds through peaceful scientific cooperation.

SESAME is a third Generation Synchrotron Light Source

Original idea: rebuild an old German light-source (BESSY 1) in Jordan. The SESAME Members (most with very limited science budgets) joined with no obligation to provide capital funding. This idea was (correctly) abandoned (although refurbished parts of BESSY 1 will be used). Now building a new, competitive 3rd generation light-source which will attract the best scientists from across the region

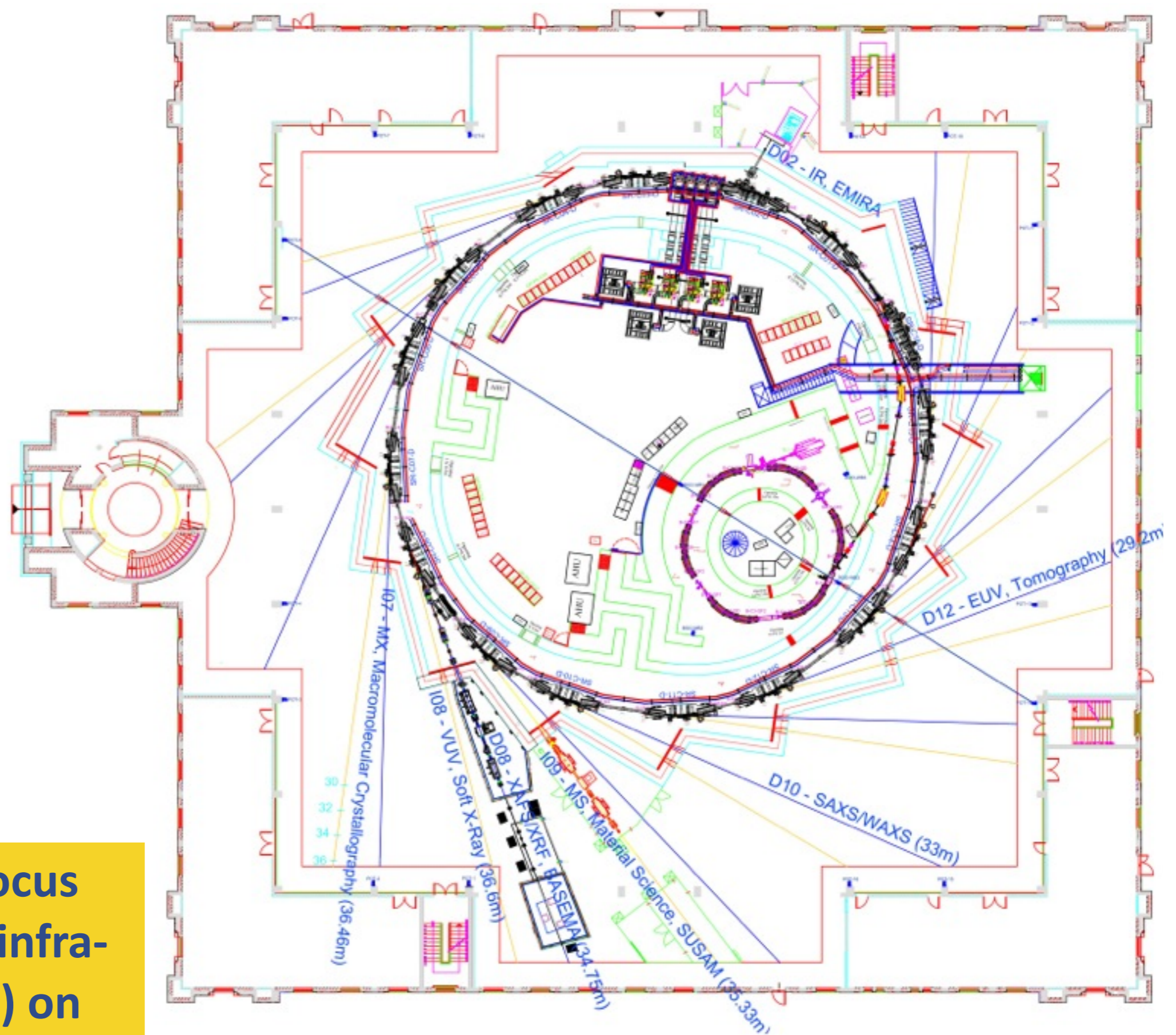
Energy; **2.5 GeV**

Circumference;
133m

12 Insertion Devices

13 Bending Magnet
beamlines

Space for future full
energy injector in
main ring tunnel



**Beamlines focus
intense light (infra-
red to X-rays) on
experimental targets**

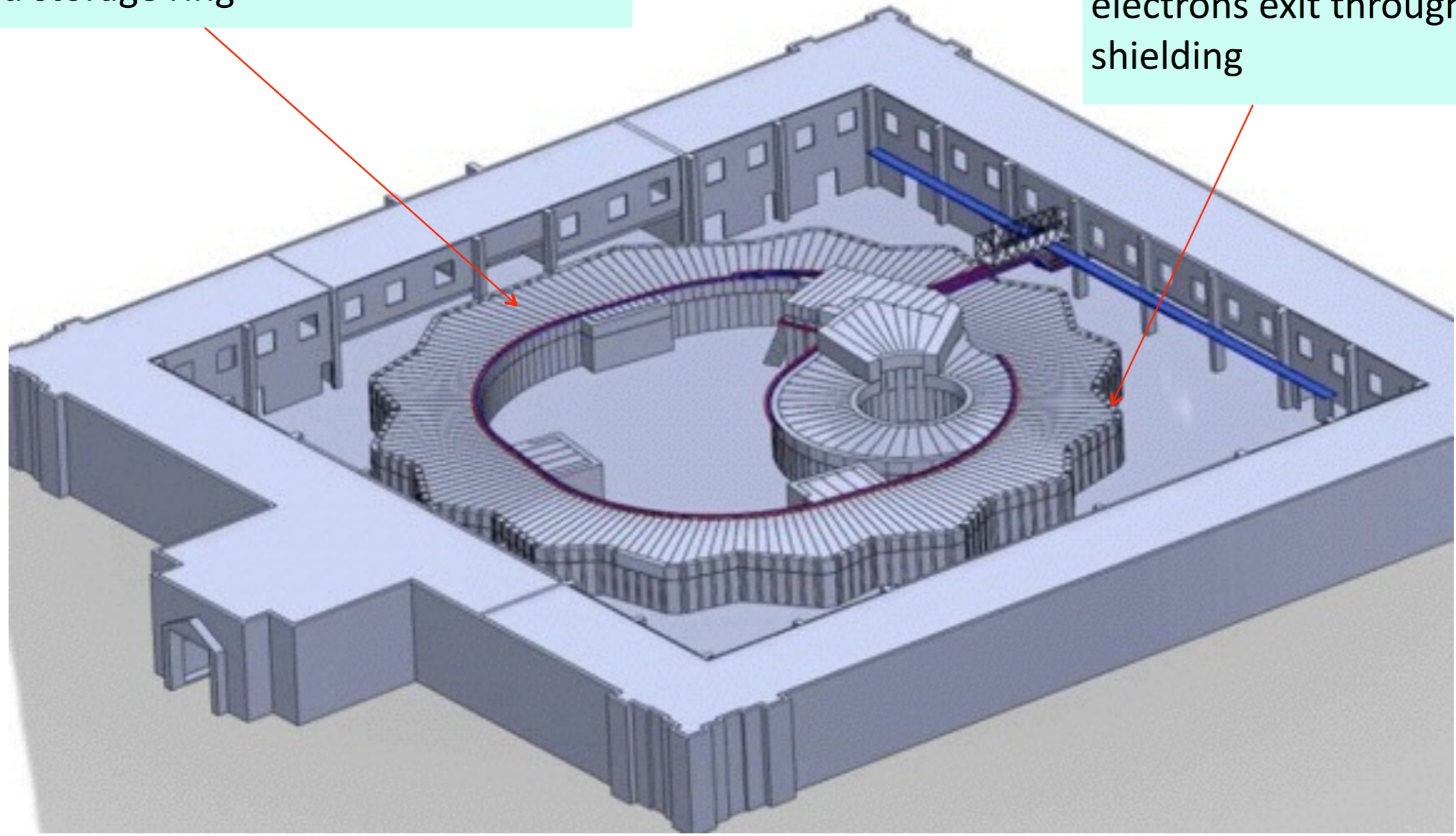
SESAME; *under construction in Jordan*

www.sesame.org.jo

Inside the SESAME Experimental Hall Schematic

Shielding houses electron accelerator and storage ring

Intense beams of light (infra-red to X-rays) generated by circulating electrons exit through ports in the shielding



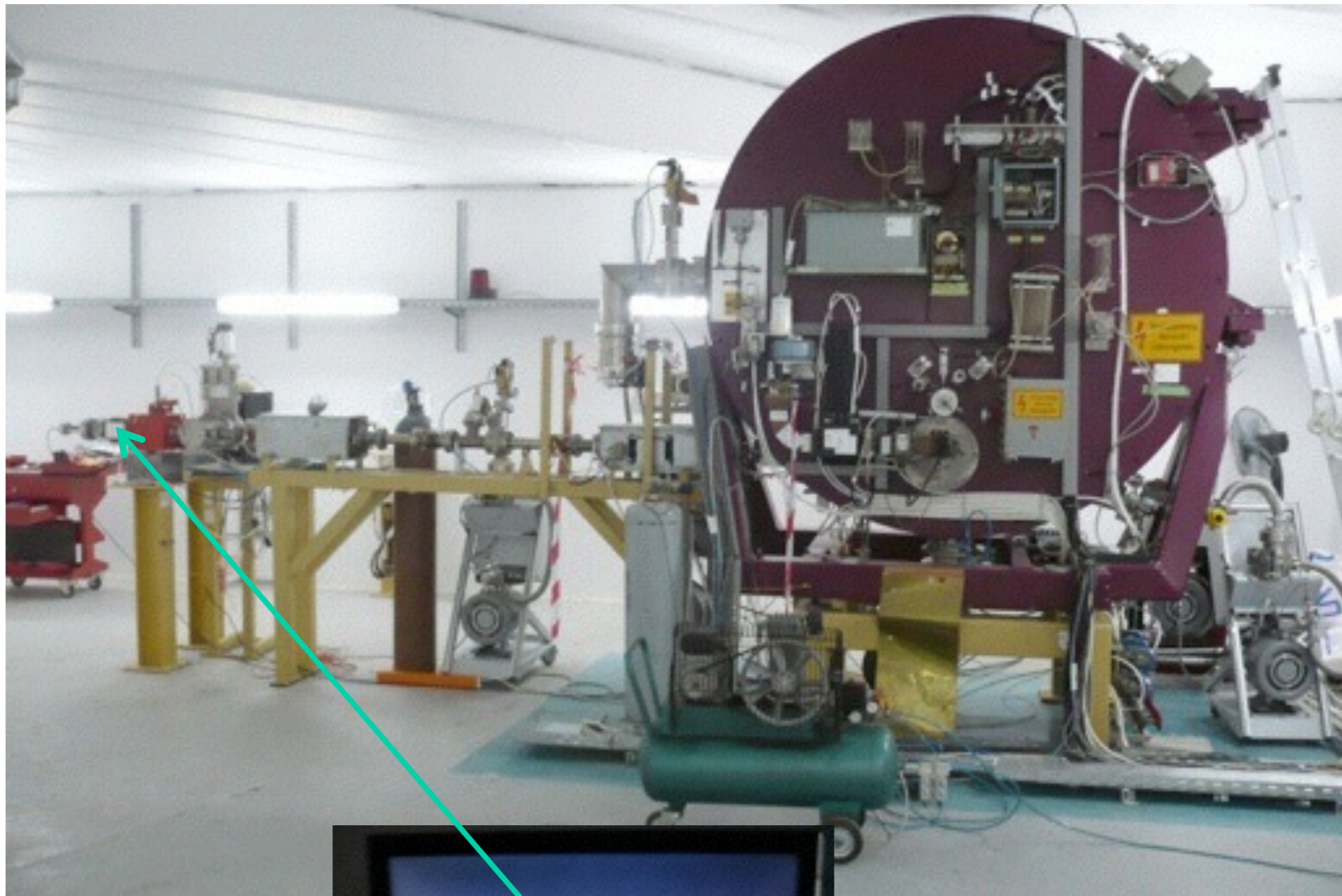
Shielding Under Construction, November 2010



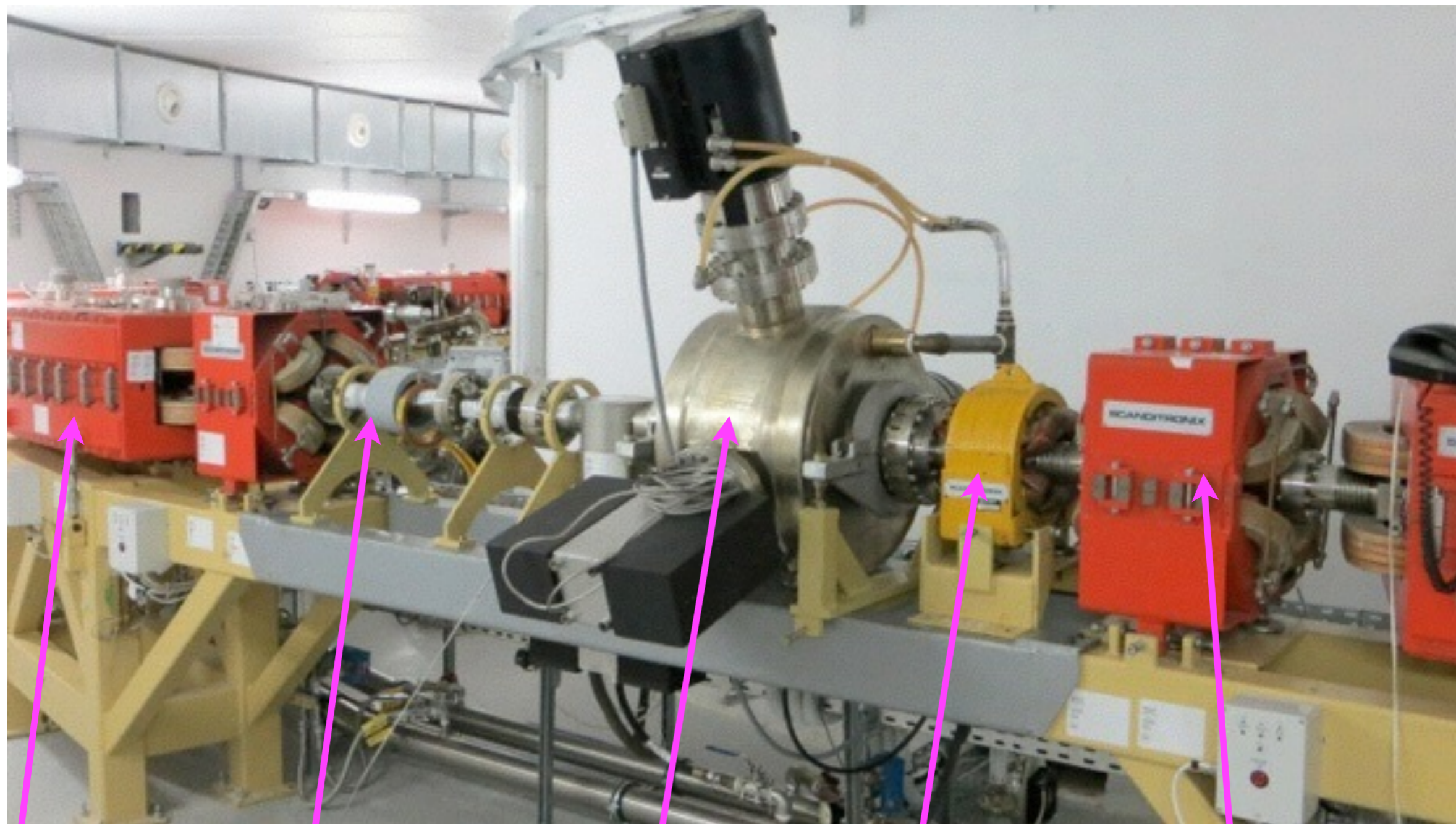
Shielding Completed, May 2011



Beam in the Transfer Line 1 – (2012)



The Booster (based on BESSY1)



Dipole

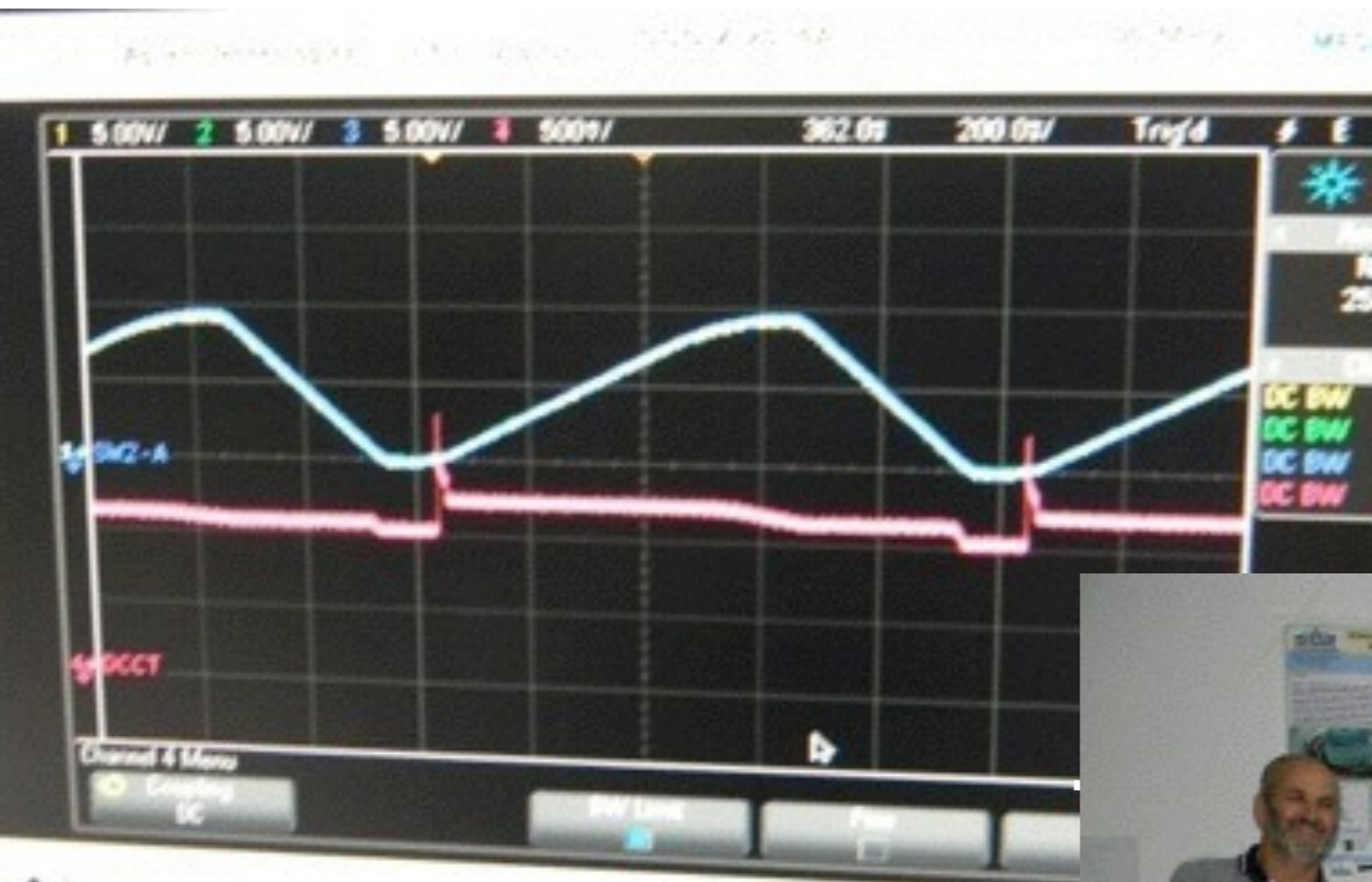
Current Monitor

RF Cavity

Corrector

Quadrupole

800 MeV Booster Beam Achieved on September 3, 2014



Control room monitor with 800 MeV, two injections appearing



SESAME staff in the control room at the moment of achieving 800 MeV

SESAME Facebook page

[https://
www.facebook.com/
SESAME.light.source/](https://www.facebook.com/SESAME.light.source/)



SESAME shared a link.

Posted by Giorgio Paolucci [?] · 4 September

Very good news!

<http://sesame.org.jo/sesame/news/355-sesame's-800-mev-booster-synchrotron-is-now-in-operation.html>



SESAME's 800 MeV Booster Synchrotron is now in Operation

sesame.org.jo

SESAME - Synchrotron-light for Experimental Science and Applications in the Middle...

3,938 people reached

Boost Post

Unlike · Comment · Share

👍 19 🗨️ 5 ➦ 25 Shares



A New Roof

Dec. 2013 Roof deflected by heavy snow load

Equipment protected from water

Roof supported by jacks and scaffolds

Jan.2014: Jordanian and International Expert-Commission assigned to investigate the accident

Mar. 2014: Report provided: Connection of diagonal trusses not appropriate designed further defaults during construction (lack of supervision)

Apr. 2014: Agreement SESAME –Constructor to reconstruct the roof

SESAME (Royal court) : 350 k JD fixed

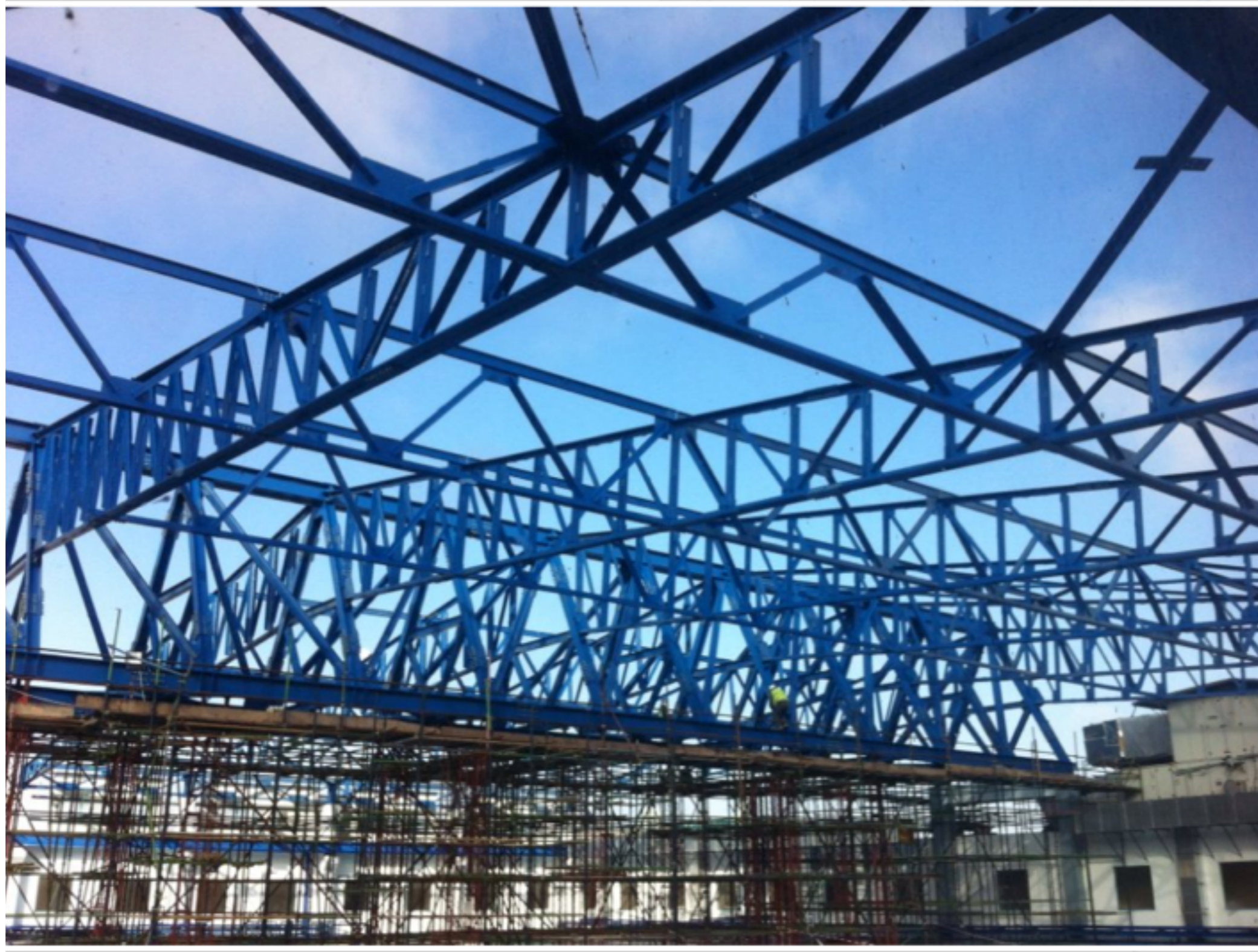
Constructor remaining: ~ 700 k JD

May 2014-Apr 2015: Building of a new roof

The Roof accident (Dec. 2013)



Towards a New Roof (Oct. 2014)



(Booster commissioned in THIS environment!)

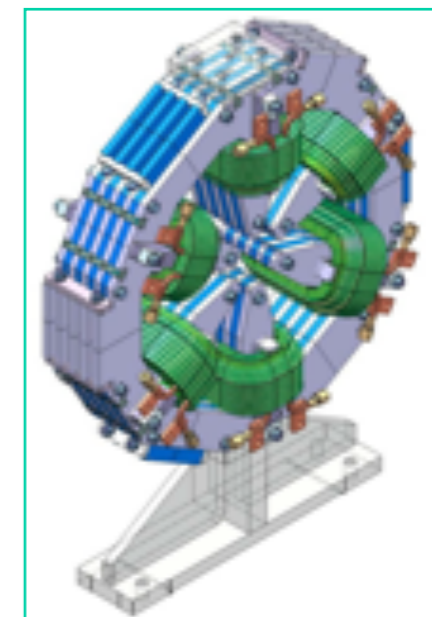
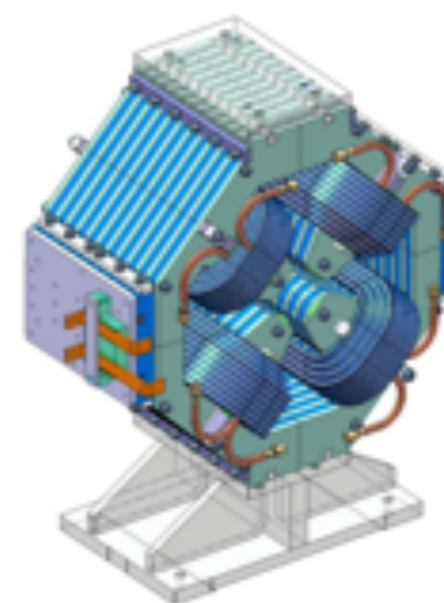
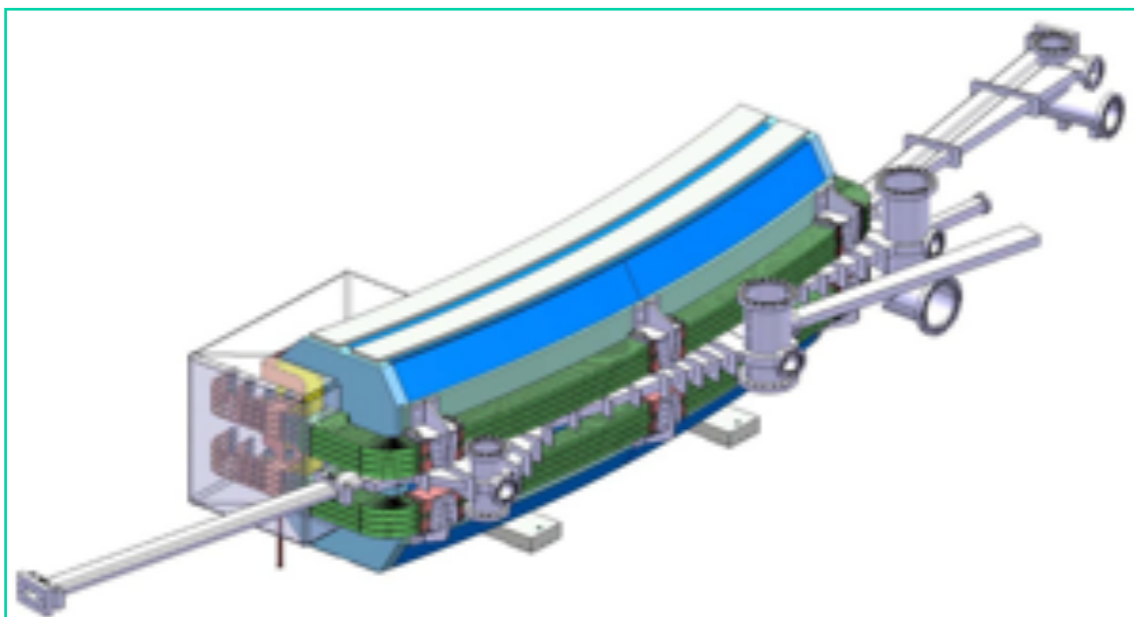
New Roof



CESSAMag: Storage Ring Magnets

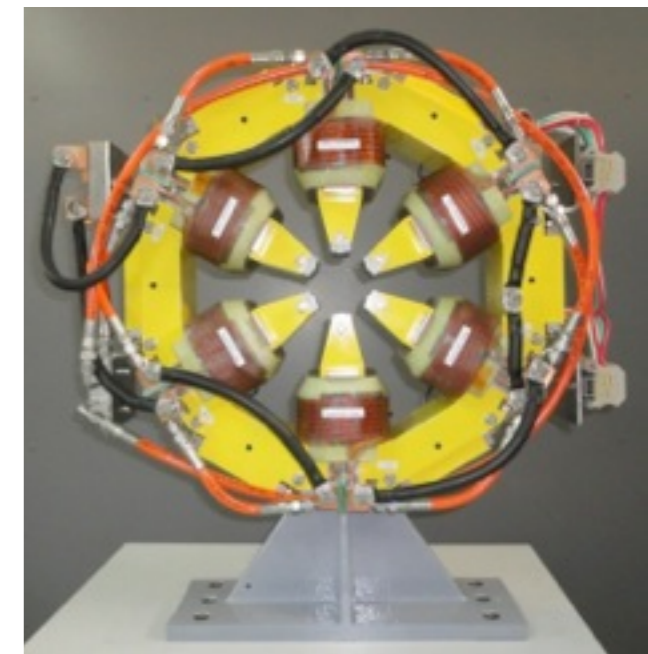
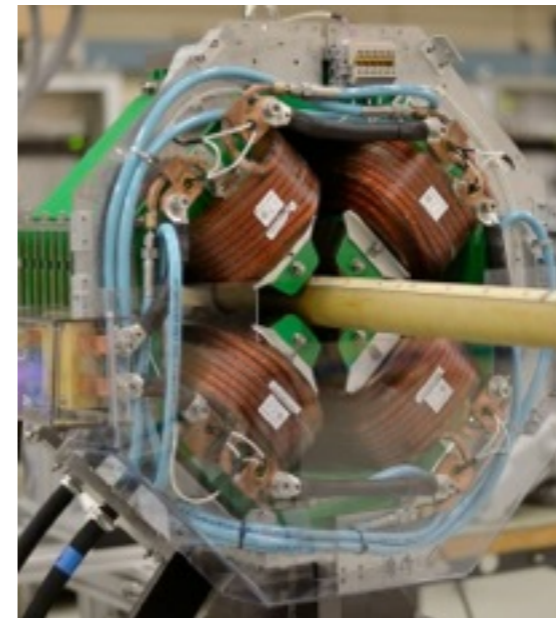
Project approved by EU:	May 2013
CERN-Tender request QP, DP:	Jul.2013
Opening of Bids	Aug. 2013
Contract award (DP: TESLA, QP: ELYTT)	Aug. 2013

Price for magnets allows power supplies to be financed (partially) within CESSAMag-Project



Storage Ring Magnets

- ✓ Storage ring magnets are constructed through CESSAMag project in the frame of SESAME-CERN/EU collaboration.
 - ✓ Dipole (constructed by TESLA, UK) prototype is being magnetically measured at ALBA.
All dipoles to be delivered by Sep. 2015.
- ✓ Quadrupole prototype is being assembled (by Elytt-Spain, coils by STS-Turkey).
First batch to be measured at CERN by March 2015.
- ✓ Sextupole prototype (by CNE-Cyprus & HMC-3-Pakistan, coils by SEF-France) has been magnetically measured at CERN.
First batch to be measured at CERN by March 2015.

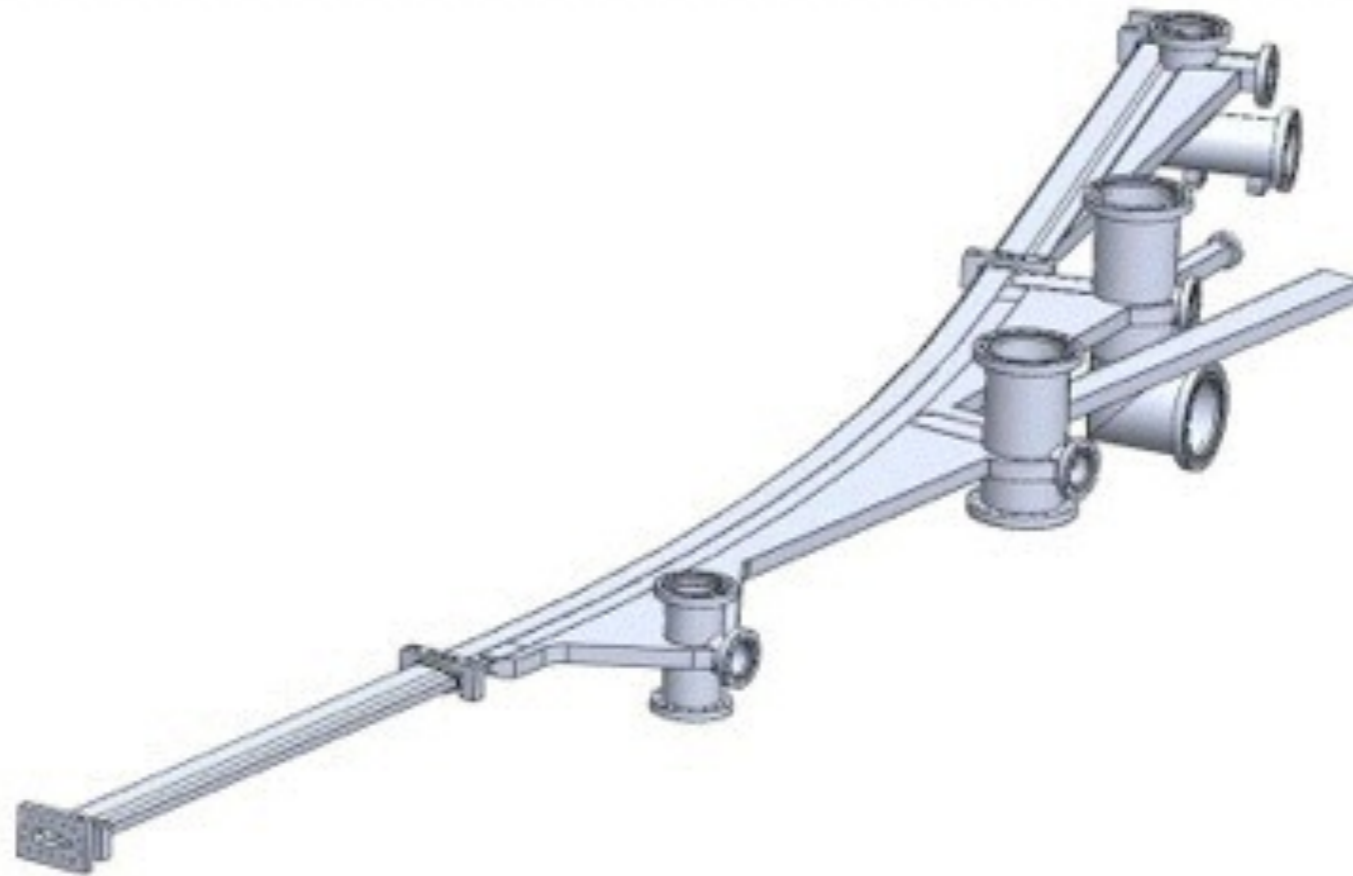


Storage Ring Status: Magnets

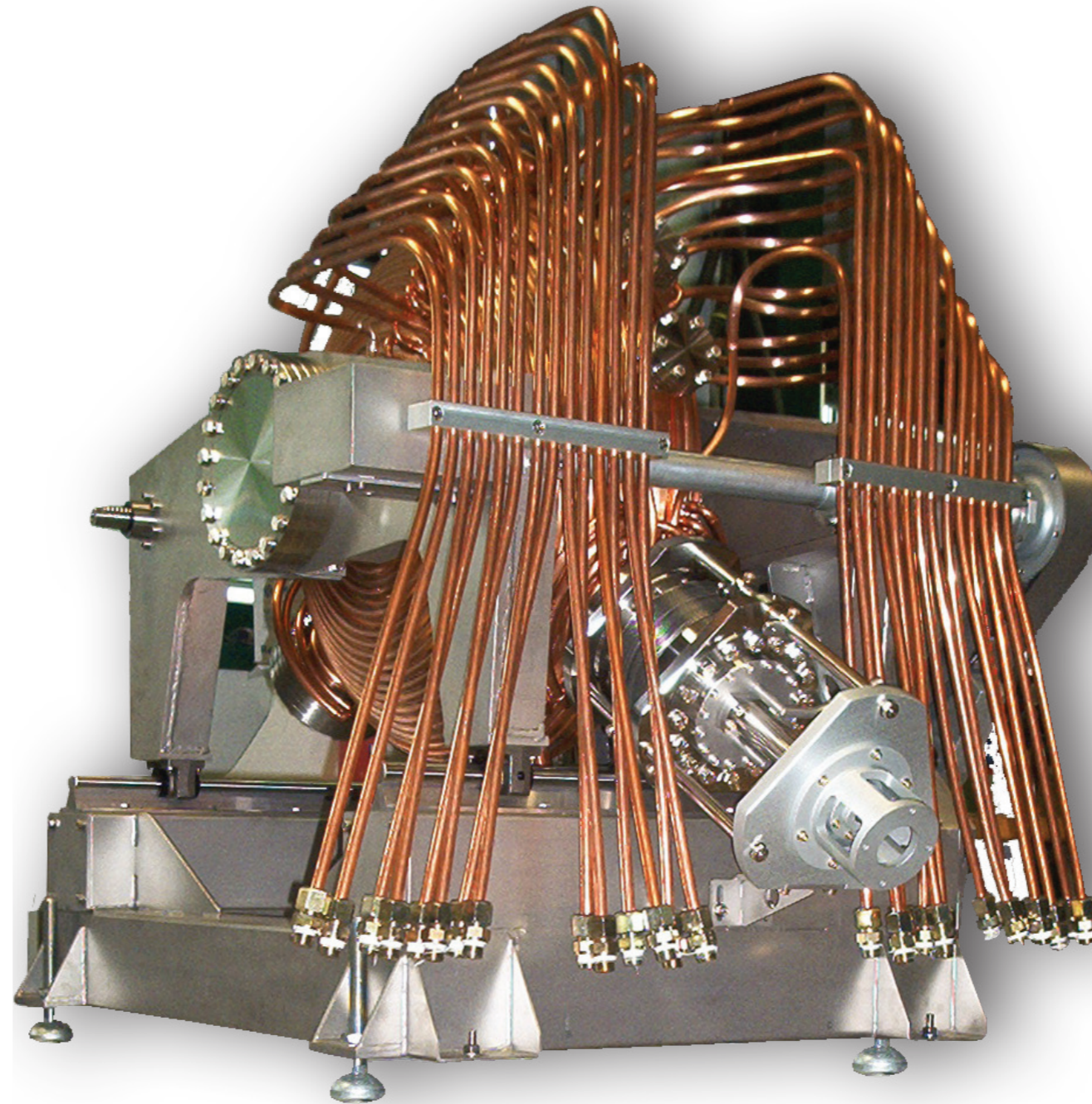


An engineer tests the installation of vacuum chamber and magnets for SESAME, at CERN's magnet-testing facility SM18 (Image: Maximilian Brice/CERN)

Invitation to Bid: Jun. 13
3 bids received : Aug. 13 (FMB, CECOM, FZJ)
Evaluation internal and external
FMB selected and contract signed Jan. 2014



Storage Ring RF Cavities



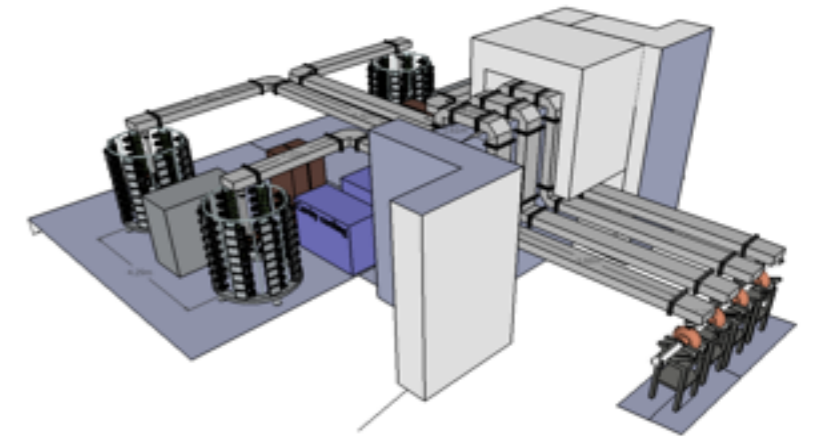
Agreement signed with INFN and Elettra in May 2014 (Financial support from the Italian Ministry of Education, University and Research). Under construction at Elettra.

**First 2 RF Cavities
have been installed
in July 2016**



Storage Ring Status: RF System

- ✓ The 500MHz RF system is composed of 4 RF plants. Each plant composes:
 - 120kW Elettra cavity (detuned up to ± 2 MHz).
 - Collaboration agreement was signed with Elettra.
 - Delivery of 4 cavities foreseen by May 2016.
 - 80kW solid state amplifier (the 1st built by SOLEIL, the 3 others by Sigmaphi-SE).
 - Construction to start soon.
 - WR1800 waveguide (in kind contribution from DESY)
 - Digital LLRF



Courtesy
of SOLEIL

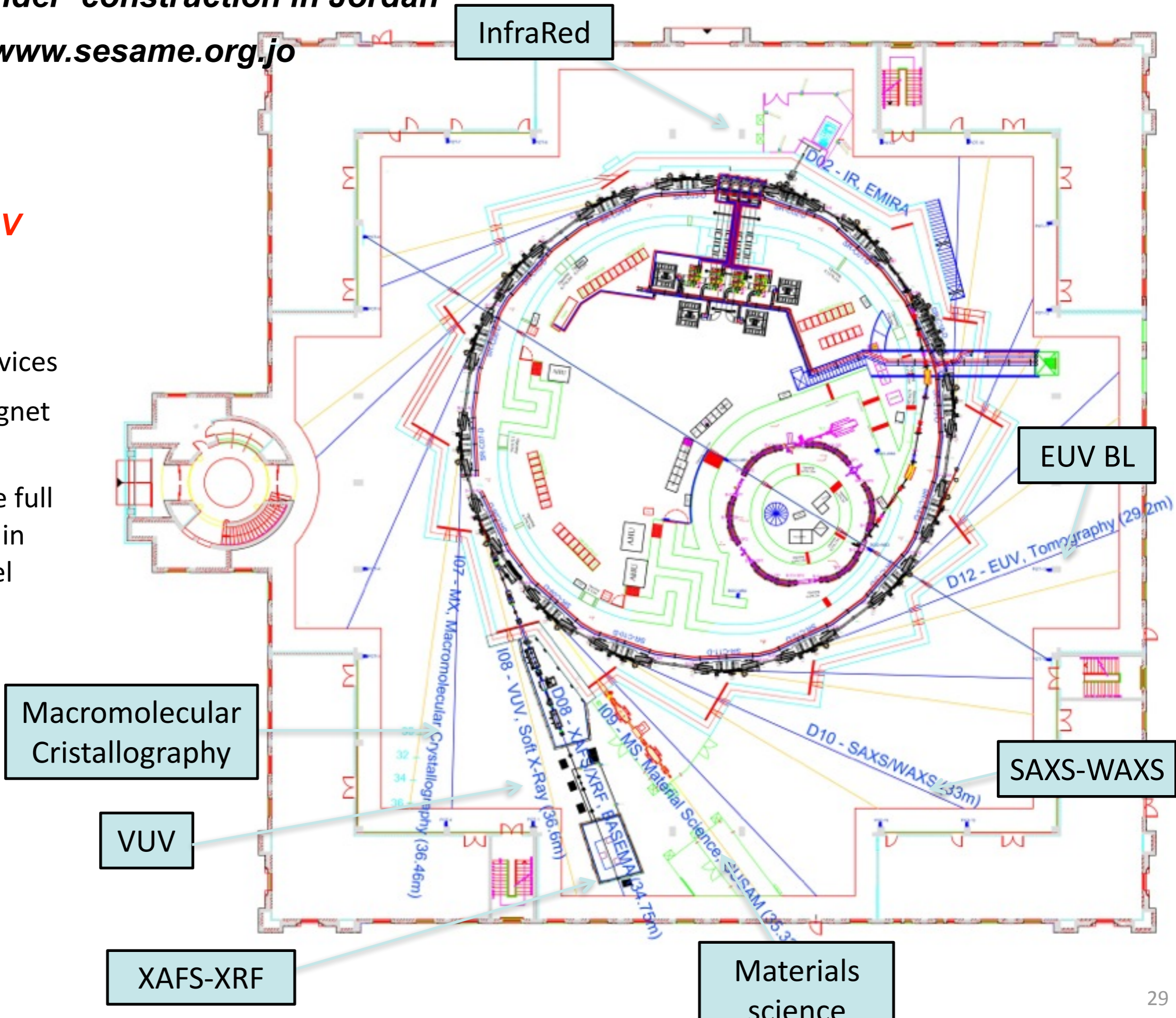
Energy; **2.5 GeV**

Circumference;
133m

12 Insertion Devices

13 Bending Magnet
beamlines

Space for future full
energy injector in
main ring tunnel



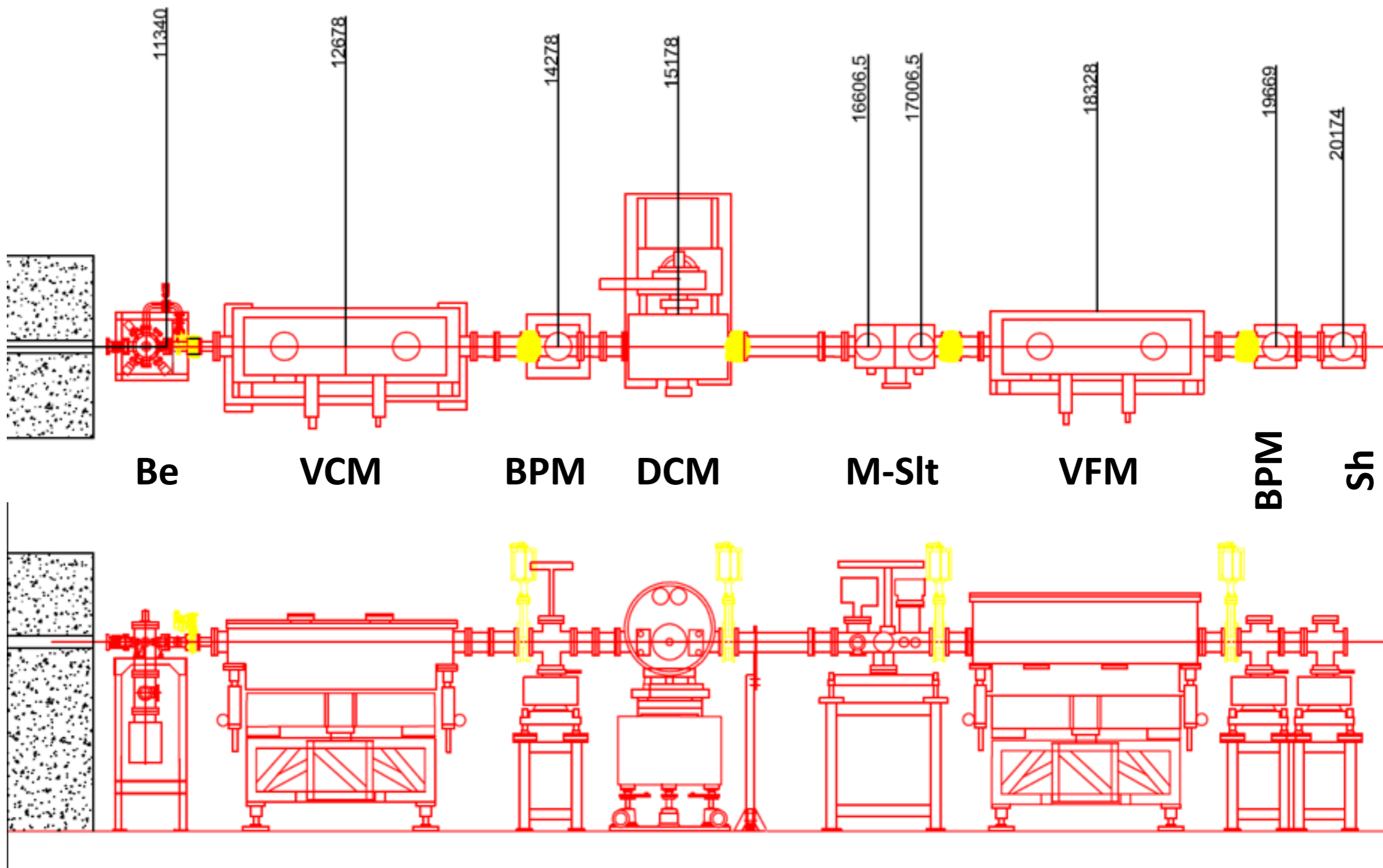
“Day-One” Beamlines

No	Beamline	Energy Range	Source Type	Comments
1	BASEMA (Beamline for Absorption Spectroscopy for Environmental and Material Applications) XAFS/XRF	4.5-30 keV	Bending Magnet	<ul style="list-style-type: none"> • Helmholtz-Zentrum Dresden-Rossendorf/ESRF • New focussing optics • New Hutch • Novel Detector
2	EMIRA (ElectroMagnetic Infrared RAdiation) IR (Infrared Spectromicroscopy)	0.001-3 eV	Bending Magnet	<ul style="list-style-type: none"> • New beamline • Mod to storage vacuum chamber
3	SUSAM (SESAME USers Application for Materials Science) MS (Materials Science)	5-25 keV	2.1 Tesla MPW (SLS)	<ul style="list-style-type: none"> • SLS XO4SA • New Hutch • Donated Dectris Detector
4	Macromolecular Crystallography (MX)	~4-~13 keV	IVU	<ul style="list-style-type: none"> • New Beamline • Partial support by the Jordanian Scientific Research Support Fund

BASEMA XRF/XAFS Beamline

BL scientist in charge: Messaoud Harfouche

Beamline Layout



Beamline Components



Safety Hutches Installed in April 2016



Optical Components Installed during Hutch Installation



Optical Components Installed during Hutch Installation



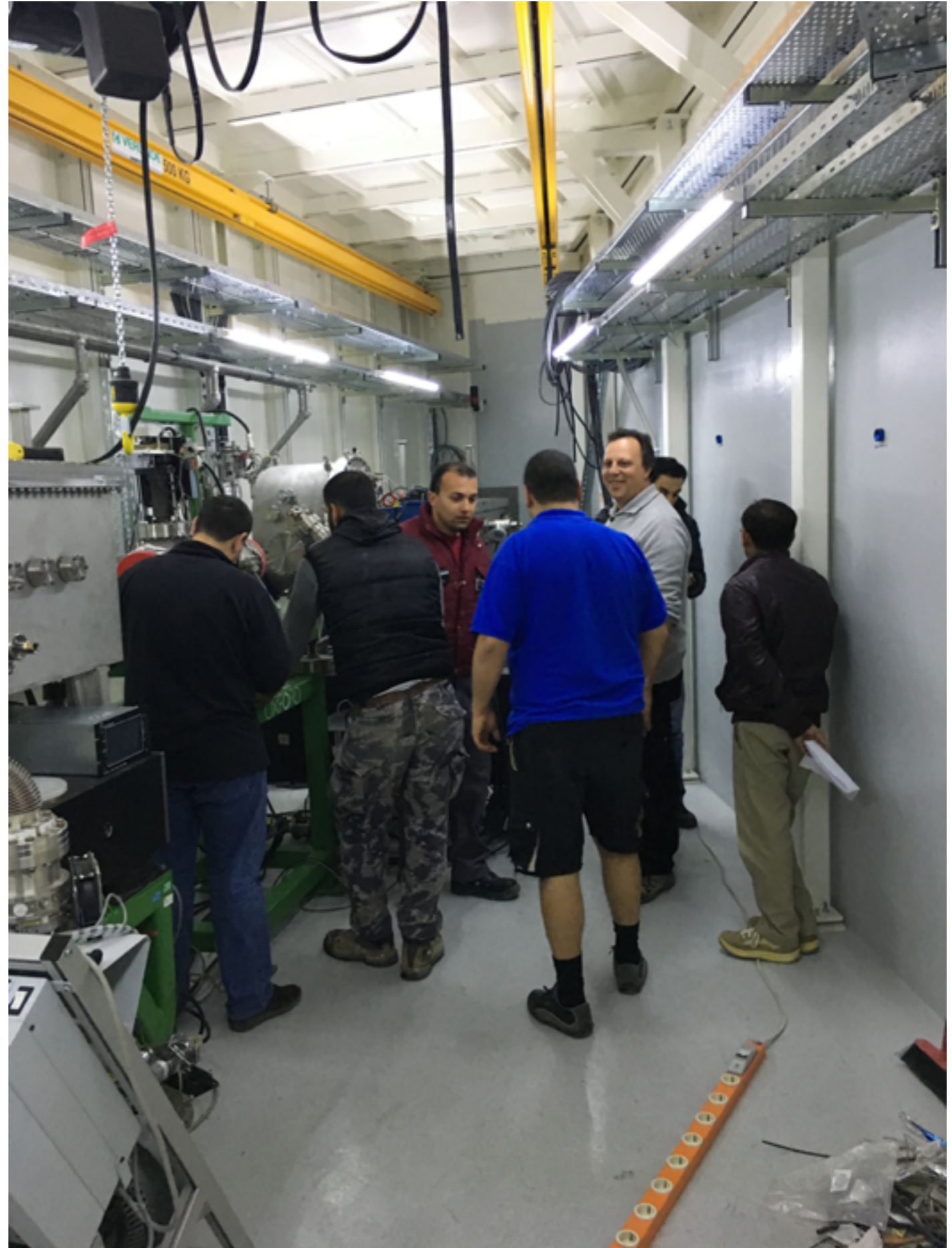
Optical Components Inside the Hutch



Monochromator movement tested, with controller developed at SESAME



Optical
components
aligned with
support by
SOLEIL team
(IAEA supported)



XAFS/XRF Beamline

XAFS Fluorescence detector

Agreement with INFN to use part of the Italian contribution* for an innovative Si-drift detector.

It is expected that the new detector will have a sensitivity at least 50 times higher than existing technology as well as an unprecedented dynamic range

*1M€ in 2013, 850k€ in 2014, 500 k€ in 2015
1.25 M€ committed for the RF cavities.

XAFS/XRF Beamline

XAFS Fluorescence detector



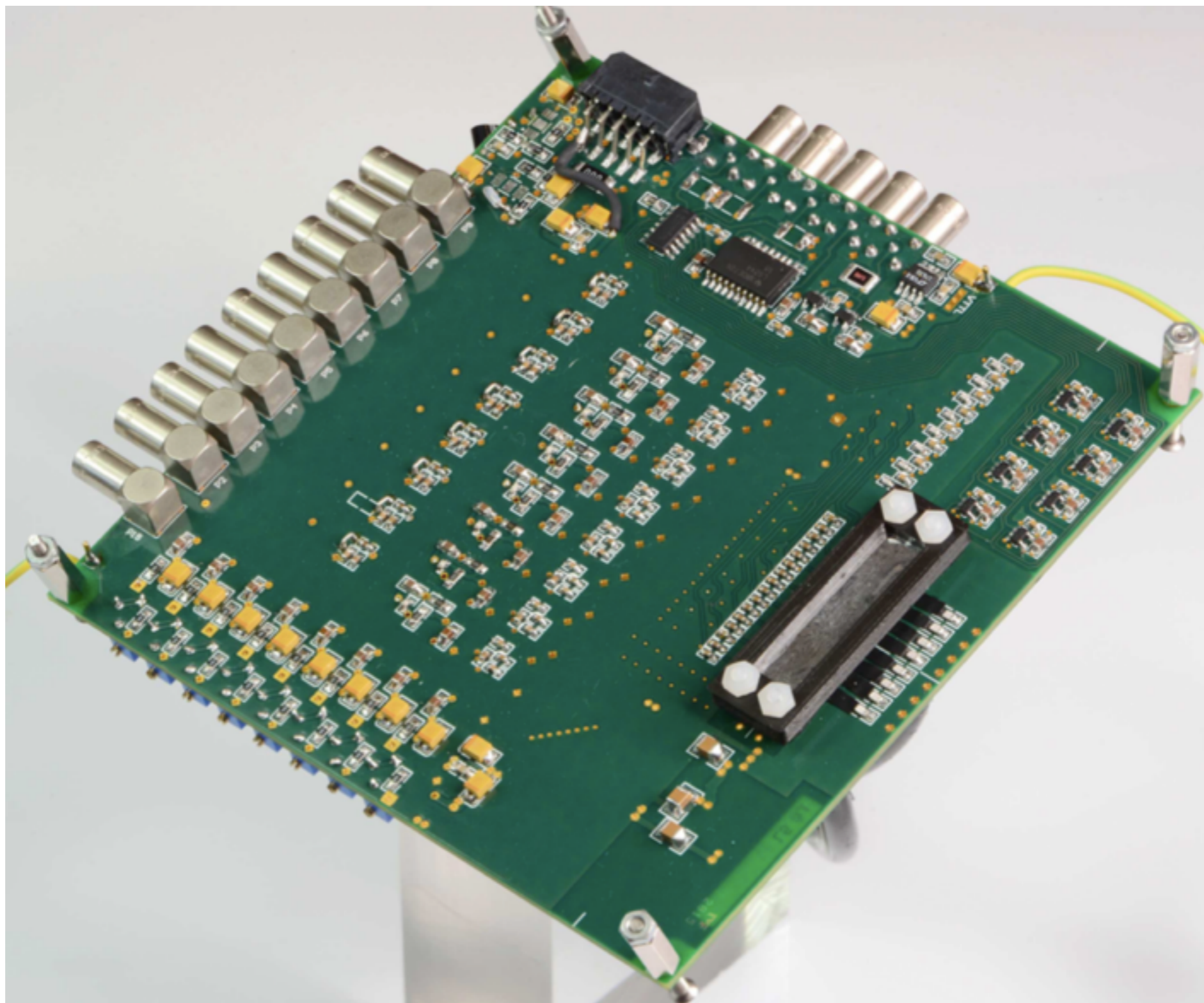
The 8 channel SDDA anode (top) and entrance window (bottom) sides.

The SESAME detector will include 8 of these modules (64 cells).

Each cell (9 mm^2) can handle $50 \text{ kc/s} \rightarrow 3.2 \text{ Mc/s}$ total, with
an active area of 576 mm^2

XAFS/XRF Beamline

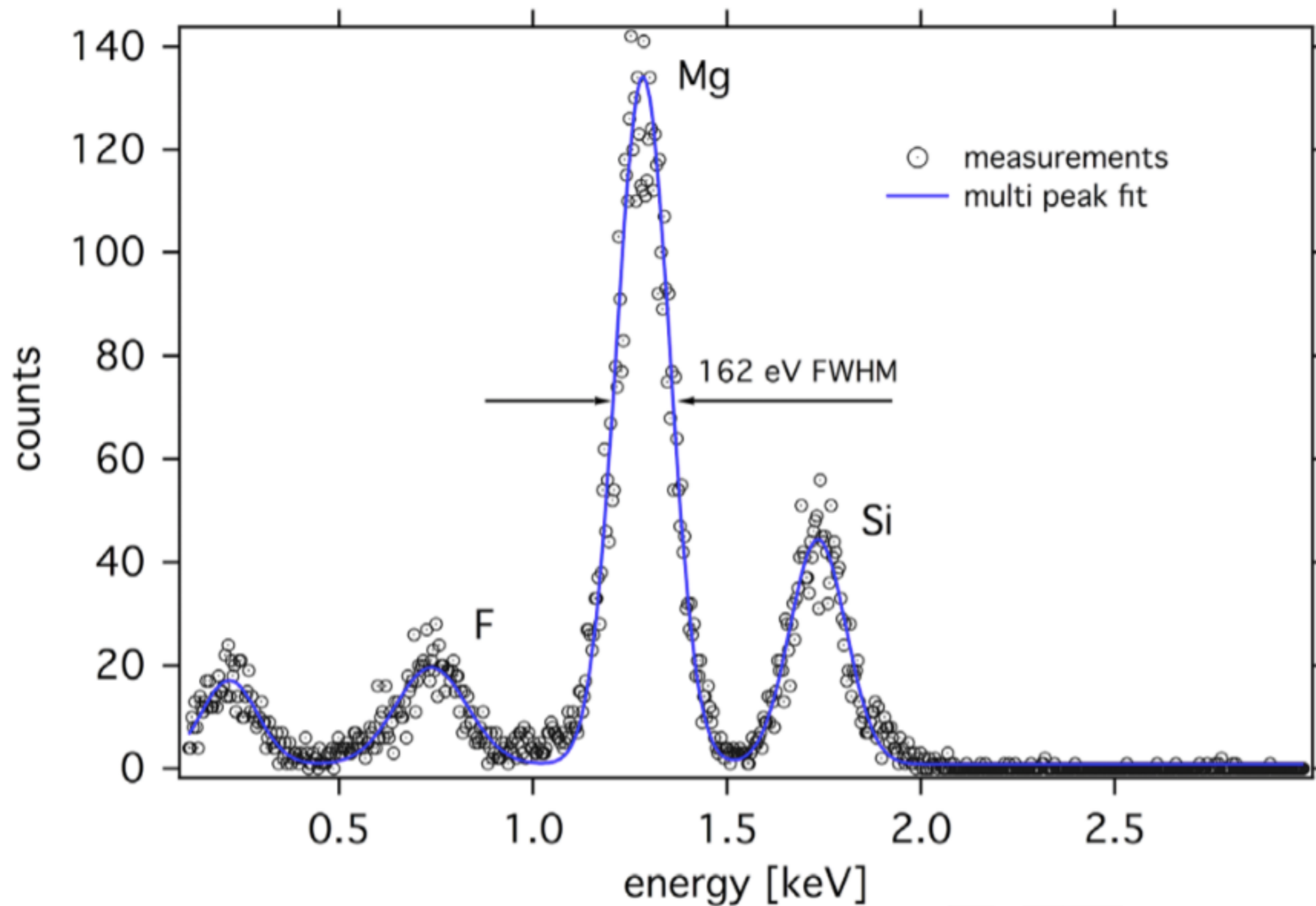
Test bench with prototype detector



XAFS/XRF Beamline

XAFS Fluorescence detector

Room temperature tests



XAFS/XRF Beamline

XAFS Fluorescence detector

TABLE I
X-RAY SDD PERFORMANCE AT ROOM TEMPERATURE

Reference	year	Detector area (mm ²)	Temperature (°C)	5.9 keV ⁵⁵ Fe FWHM (eV)	ENC (e- r.m.s.)	Peaking time (μs)
This work	2015	13	+20	136	7.4	1.4
[8]	2014	13	+21	141	8.6	0.8
[9]	2012	25	+25	260	27	0.1
[10]	2001	10	+25	300	--	--
[11]	1996	3.5	+27	220	21	0.5
[12]	1994	2	+24	(374)	41	--
[13]	1994	1.5	+20	327	--	7
[13]	1994	0.5	+20	267	--	7
[14]	1992	78	R.T.	940	110	0.25

Performance of the novel detector compared to existing ones

An off the shelf detector is being bought for calibration purposes

XAFS/XRF Beamline

Negotiations under way for a donation from SLS
Ionisation Chambers

BL expected to be ready in autumn 2017

XAFS Scientific activity in environmental sciences

- IAEA Coordinating Research Program (CRP) on:

Absorption and Mobility of Heavy Metals in Soils in Vicinity of Jordan and Yarmouk Rivers

- Contract # 1739, Renewed for 2013-2014 period
- Progress report of the half period submitted
- Contract renew proposal submitted for the period 2014-2015

- New CRP proposal accepted:

Synchrotron Based XRF-XAFS Techniques in Tracking Pollution (Air/Soil) in some Arab Countries

- Collaboration between SESAME (M. Harfouche), Egypt (A. Shaltout) and Jordan University (A. Hallak)
- Contract # 18383, Starting from May 1st, 2014
- Facilitates access to the micro-XRF beamline at Elettra (Italy) using beamtime allocated to IAEA
- This project represents a brick for scientific collaboration between SESAME members.

Sampling

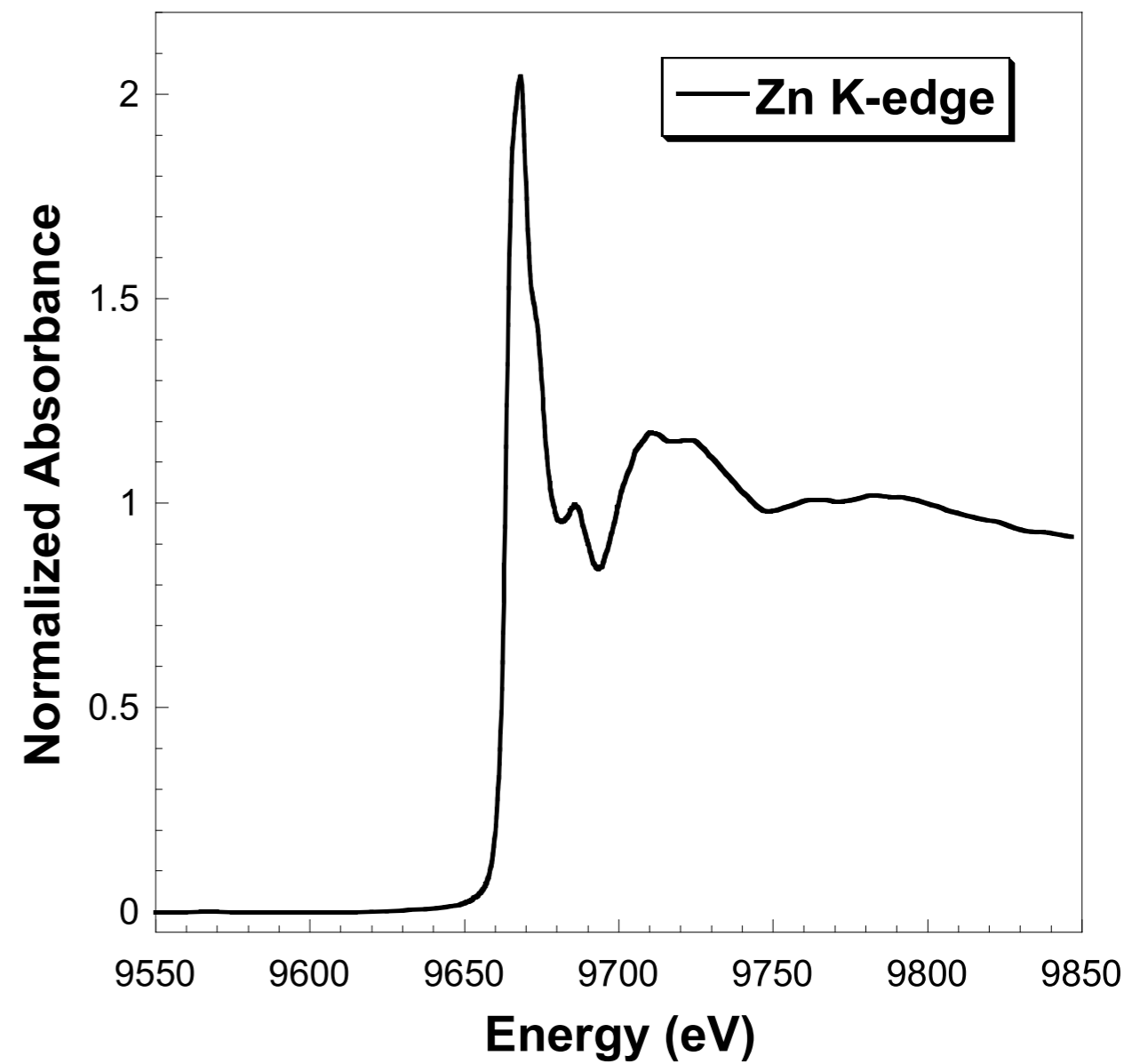
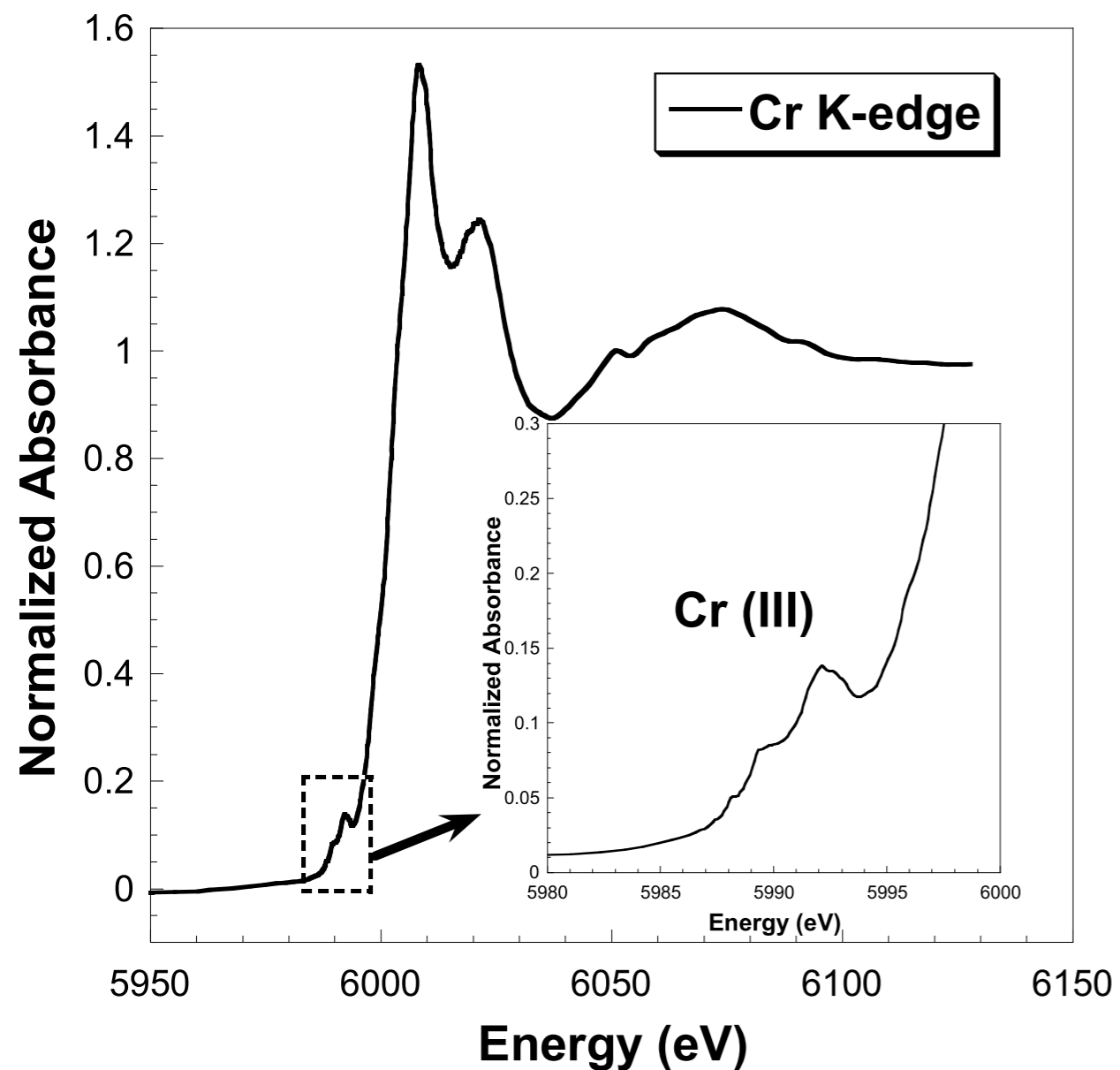
- Different distances from the river
- Different Depth (up to 50 cm)
- **Soils, plants & roots and Earthworm**



- Earthworms eat the soil which has organic matter that plants cannot use directly.
- After organic matter is digested, the earthworm releases wastes called castings.
- Castings contain many nutrients that plant can use.
- Earthworm castings can be used as garden fertilizer.

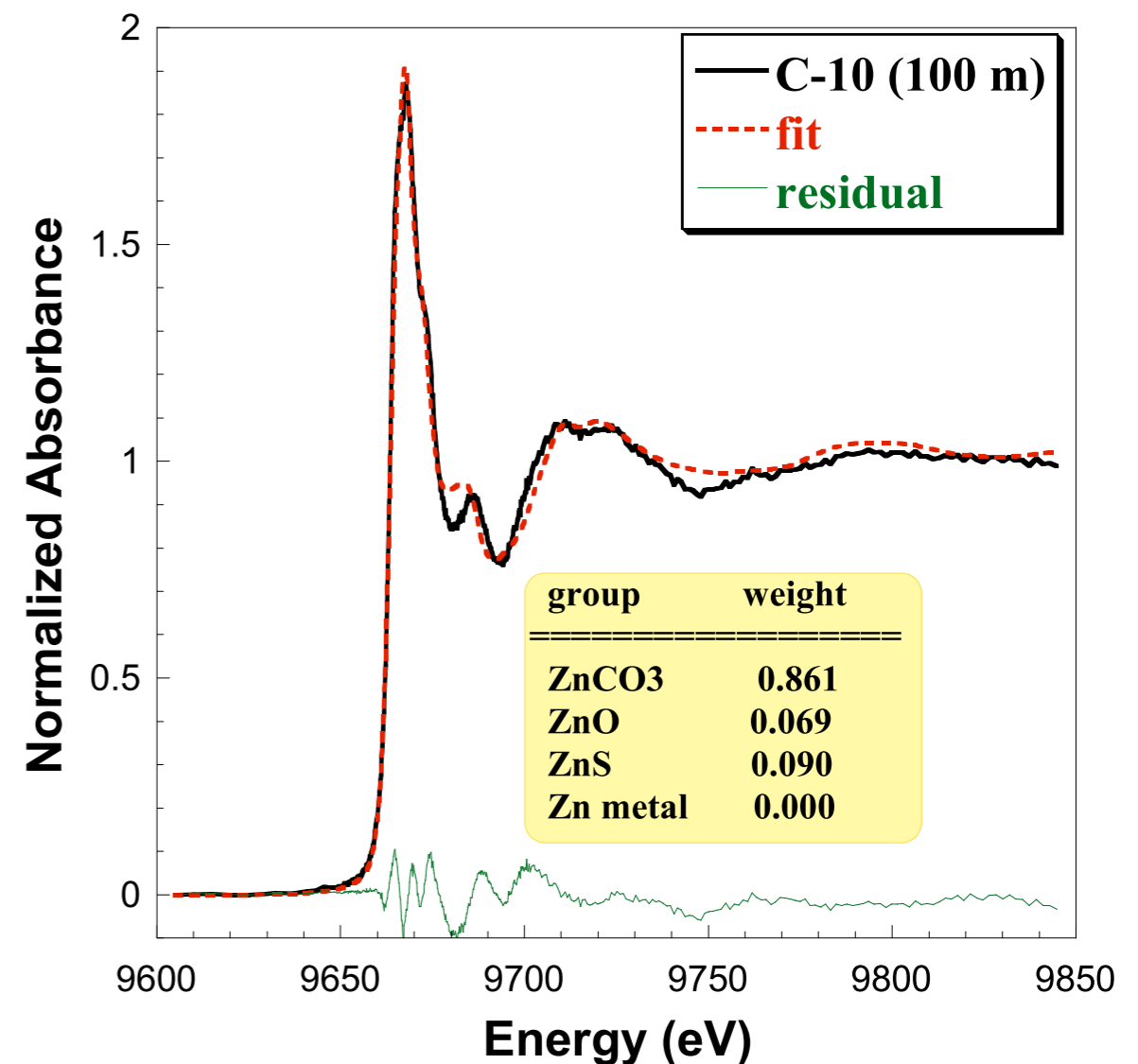
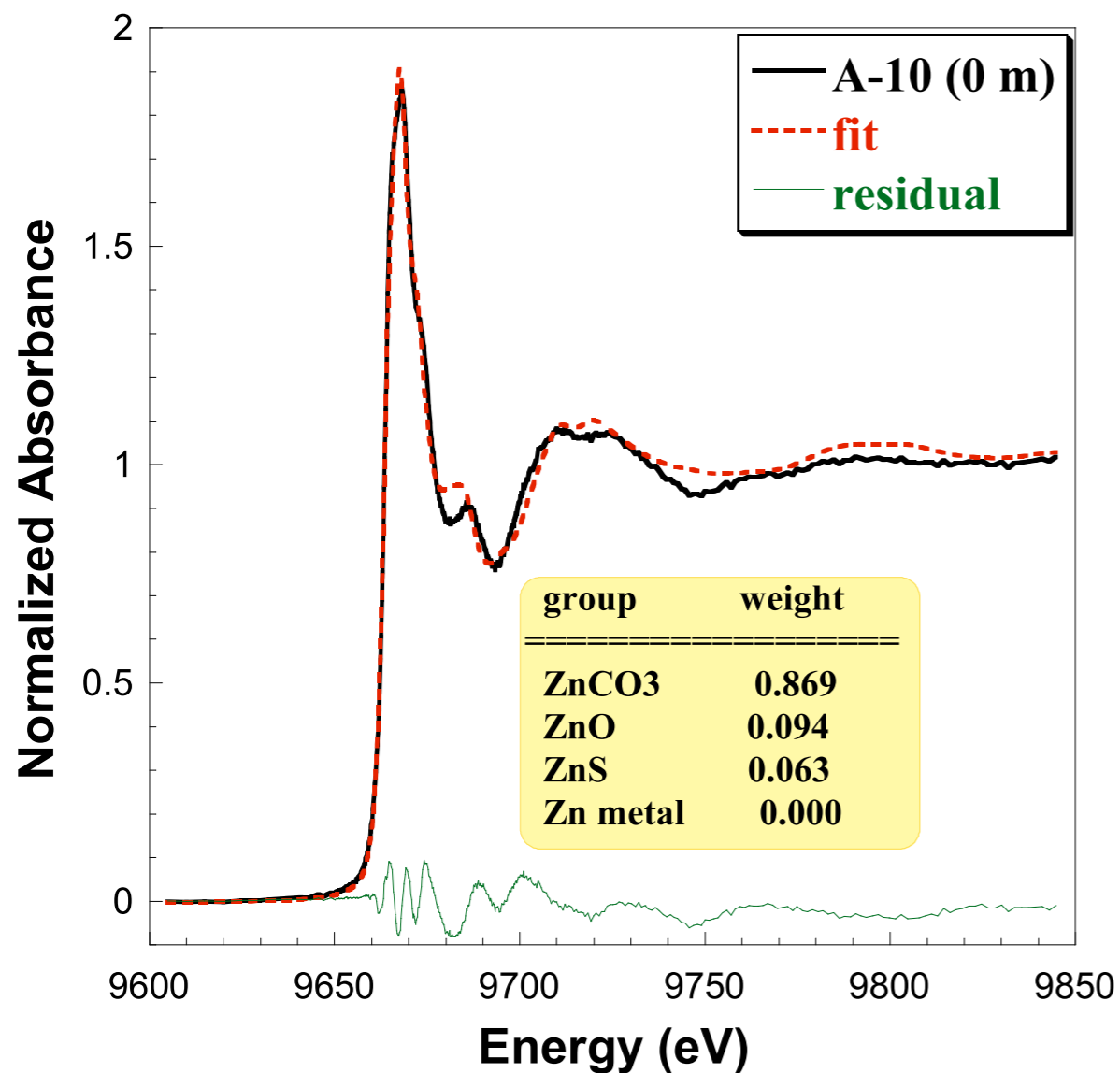
Analyzing Samples

XANES data collected at Elettra on XAFS beamline (April 2013)
 Data collected with help of Giuliana Aquilanti

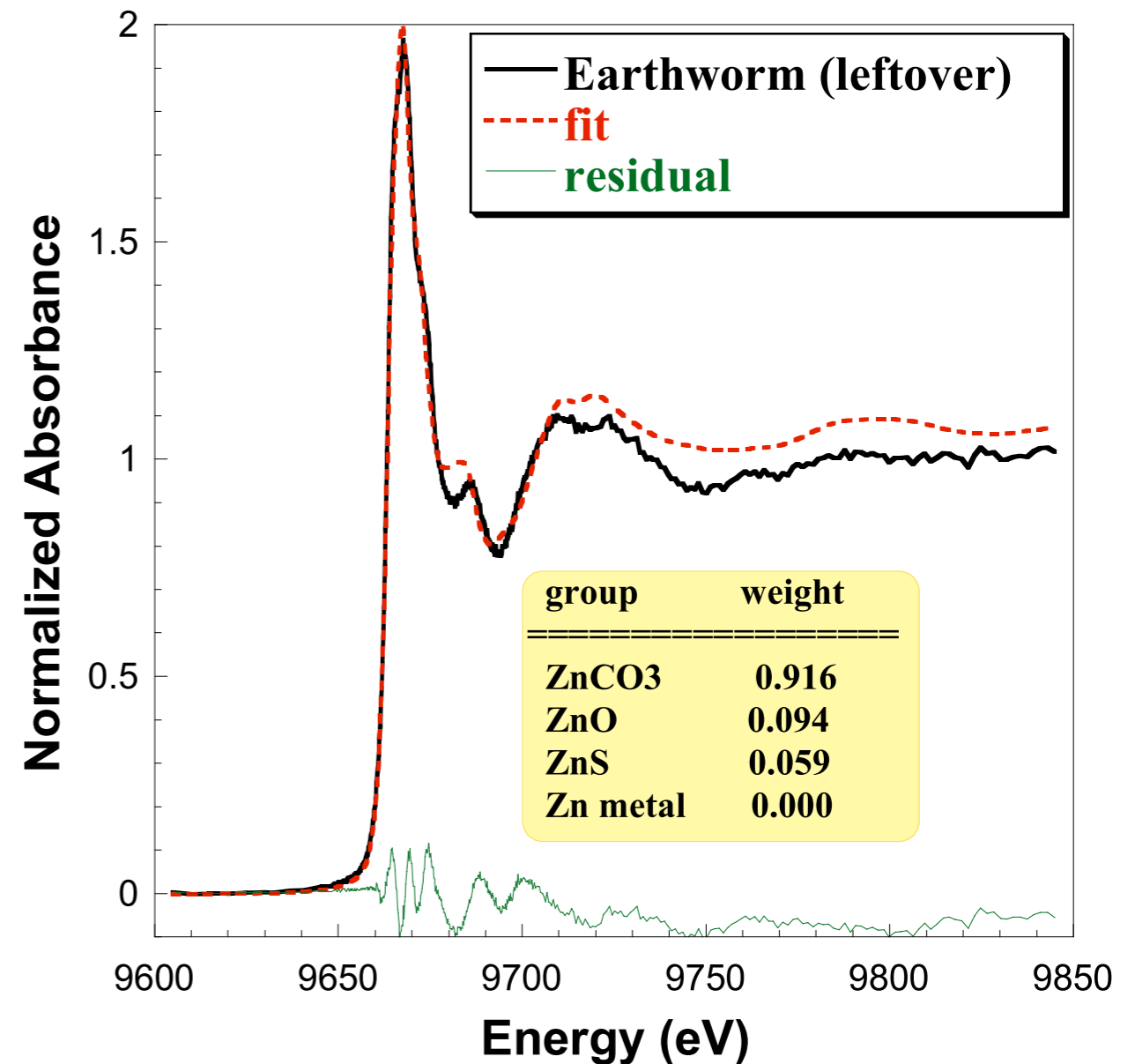
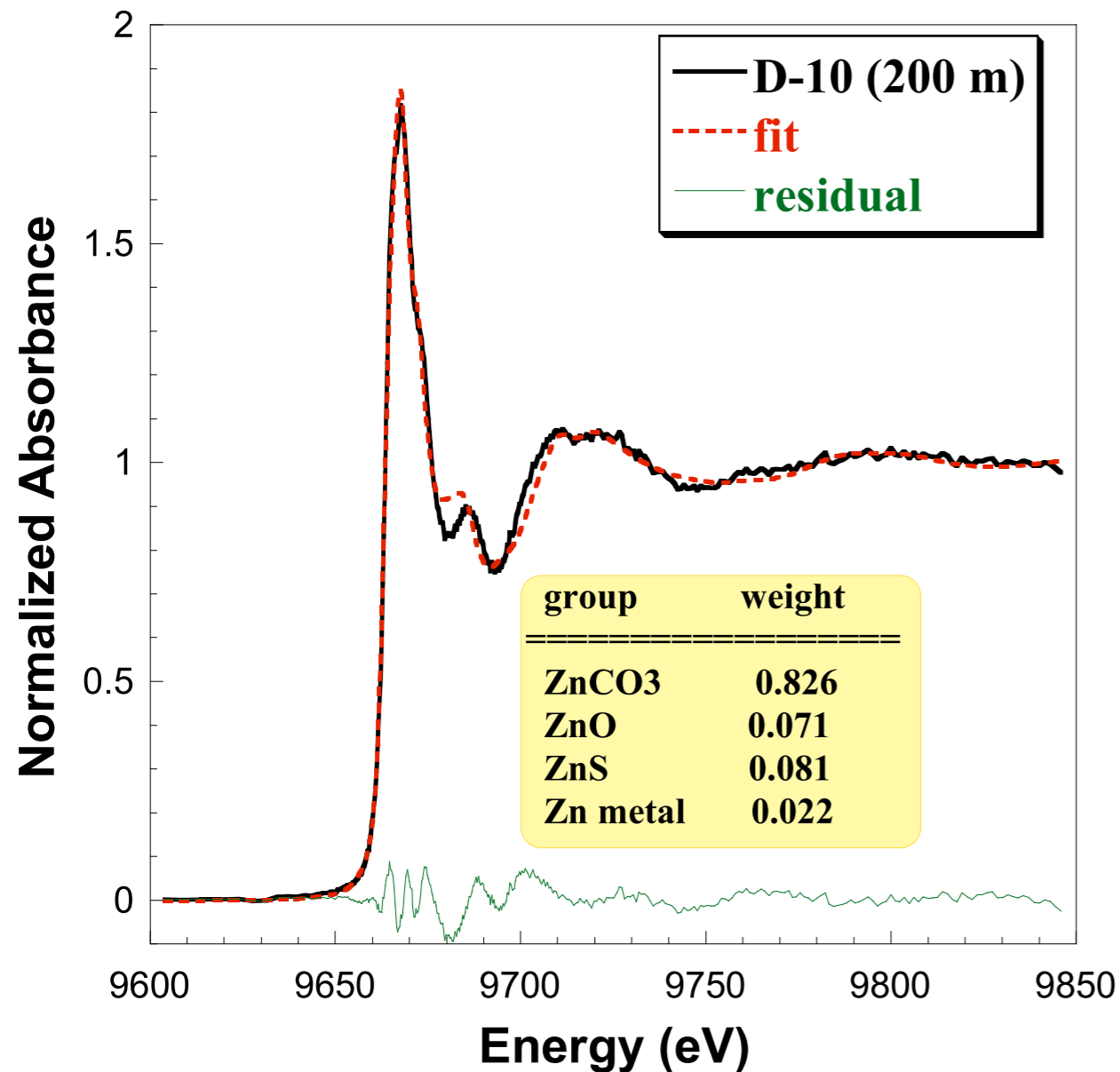


Analyzing Samples

- Data collected at Zn K-edge
- Samples at 10 cm depth and different distances from river
- Left over from an Earthworm found at 200 m
- Linear combination fitting using Zn standards



Analyzing Samples

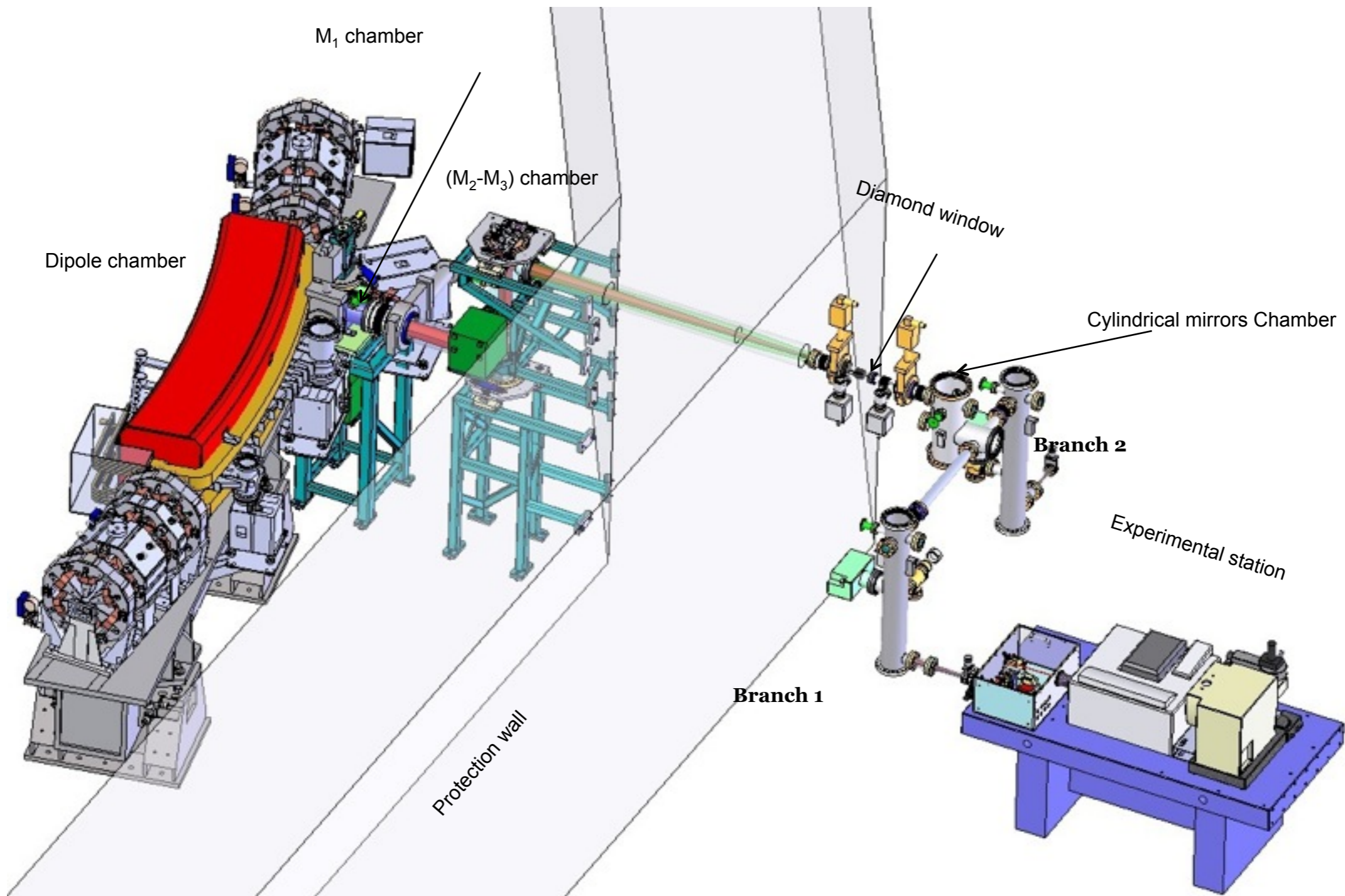


Even though Earthworm was found at 200 m,

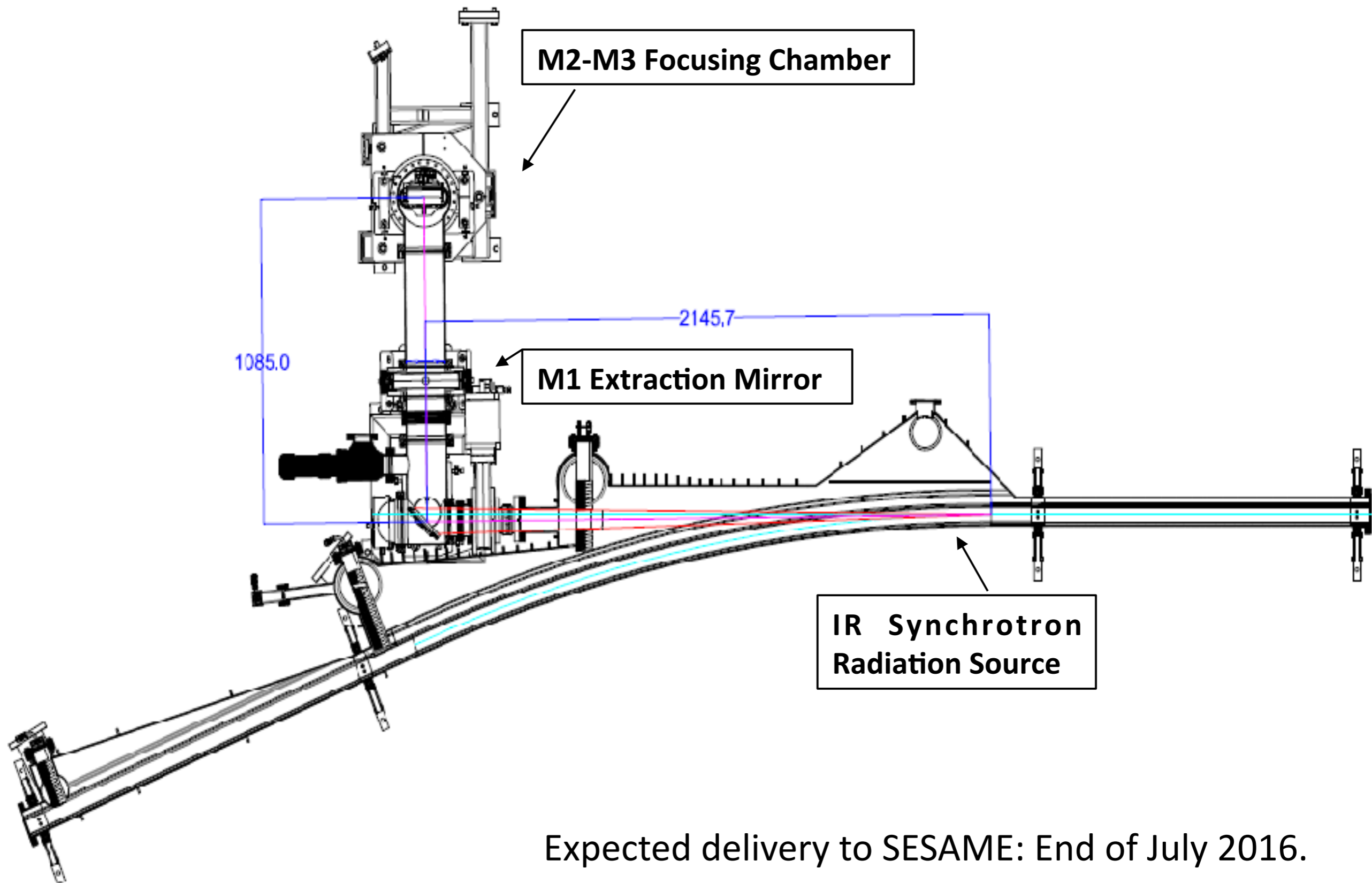
- More Zn atoms are bound to carbonate
- Less sulfur in the sample
- No Zn metal

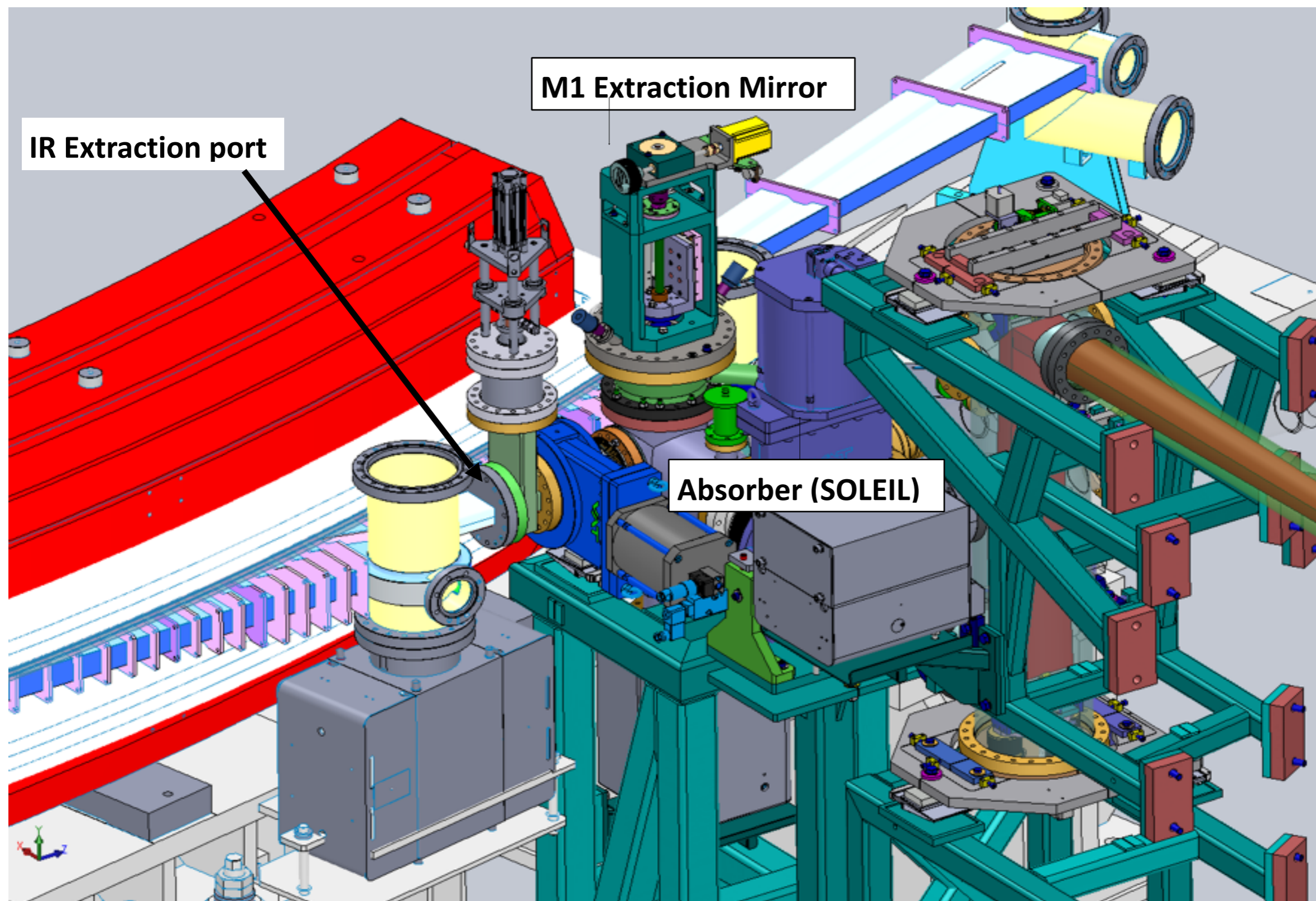
EMIRA IR Beamline

BL scientist in charge: Gihan Kamel

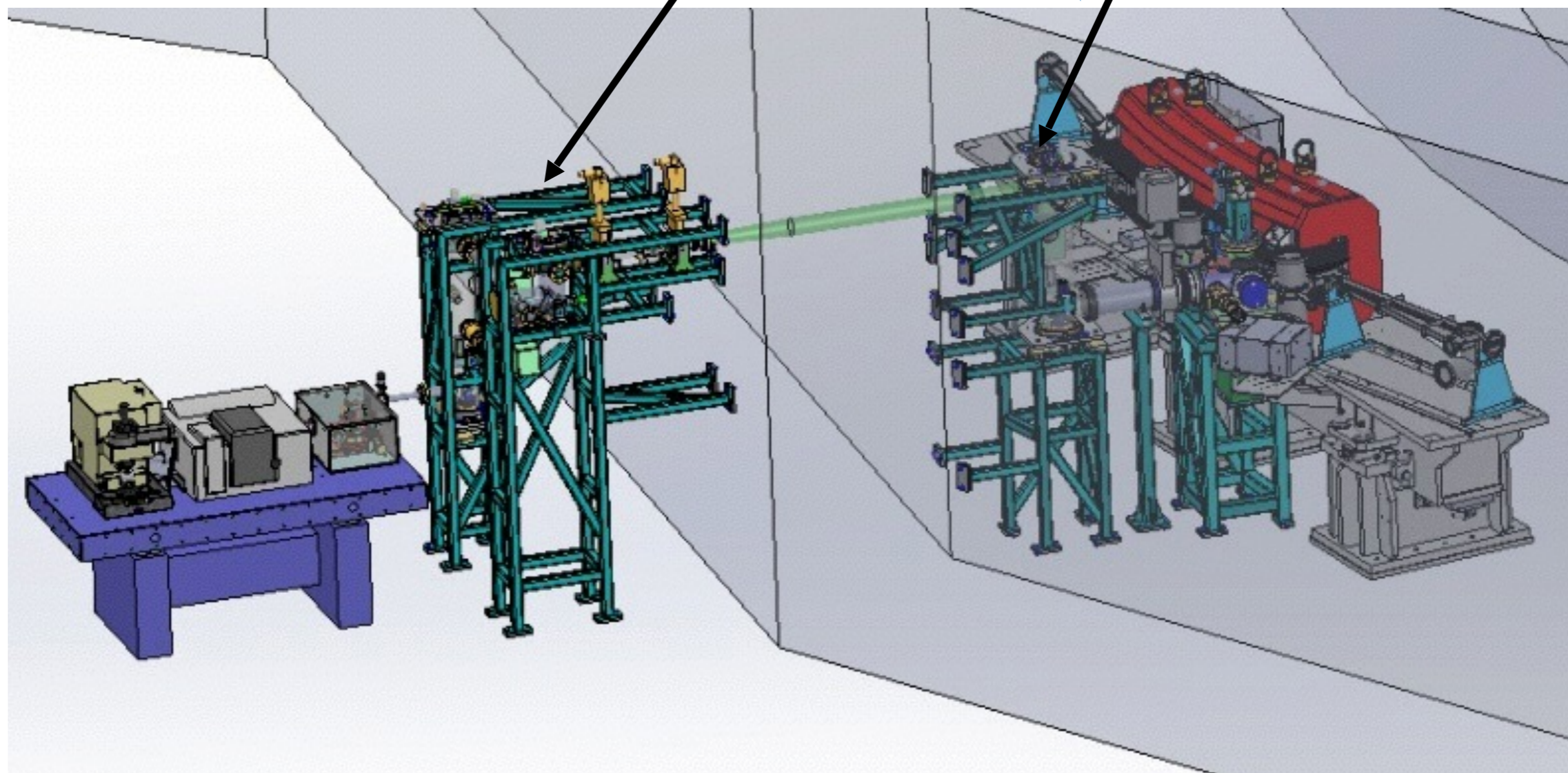
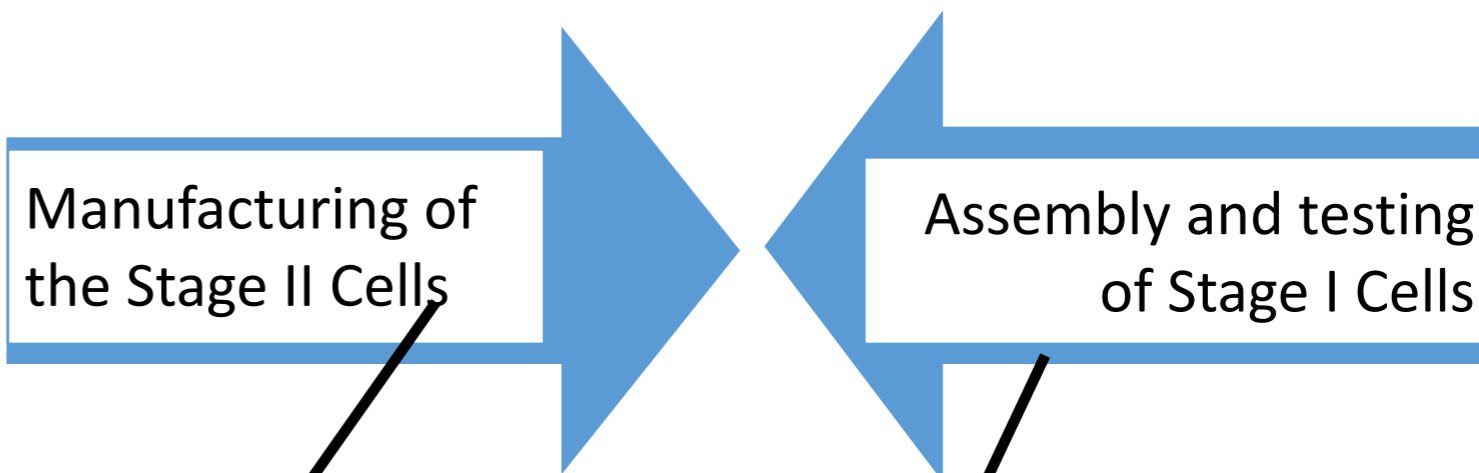


IR-Dipole chamber manufacturing in progress.





Converging point:



JUNE 2017:
Beginning beamline
Installation





IR Call for Proposals

- Posted on SESAME website February 25-2013
- Last date for submission of proposal June 15-2013
- **Peer Review Committee:**
 - Lisa Miller: Beamline Scientist – NSLS
 - Ulrich Schade: Beamline Scientist- BESSY II
 - Lisa Vaccari: Beamline Scientist - ELETTRA
- Each Proposal was reviewed by two members of the Committee, who provided a score and a comment

“Investigation of Structural Changing Patterns in Malignant Human Breast Tissues in Correlation to Benign Tissues Using FT-IR”

Dr. Sohaila Rehman, Pakistan

Accepted proposal via the 2013 call for proposals.

Two beamtimes: 25-29 March 2016

Preliminary measurements were performed.

Further measurements performed in August with travel support from Lounsbury Foundation.

A paper is being written

First published papers from the 2013 call for proposals

Materials and Design 89 (2016) 568–572



Contents lists available at ScienceDirect

Materials and Design

journal homepage: www.elsevier.com/locate/jmad



Optical and μ -FTIR mapping: A new approach for structural evaluation of V_2O_5 -lithium fluoroborate glasses



A.M. Abdelghany^{a,*}, H.A. ElBatal^b

^a Spectroscopy Department, Physics Division, National Research Center, Dokki, 12311 Cairo, Egypt

^b Glass Department, National Research Center, Dokki, 12311 Cairo, Egypt



Analyst

PAPER

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Cite this: DOI: 10.1039/c5an02378e

Study of the biochemical effects induced by X-ray irradiations in combination with gadolinium nanoparticles in F98 glioma cells: first FTIR studies at the Emira laboratory of the SESAME synchrotron

Ibraheem Yousef,^{a,b} Olivier Seksek,^c Silvia Gil,^d Yolanda Prezado,^c Josep Sulé-Suso^e
and Immaculada Martínez-Rovira^{*c}

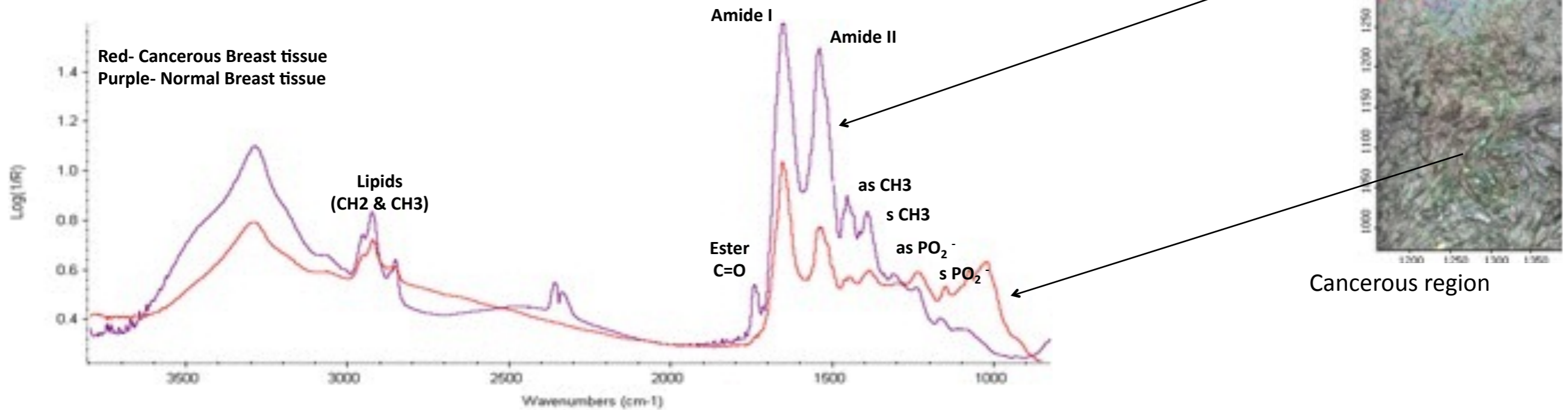
Collaborative projects with scientists from the Middle East:

- FTIR analysis of breast cancer from Iranian patients: collaboration from Tehran University, **Iran**.
- FTIR analysis of bacterial and marine micronutrients: Collaboration from the University of **Pakistan**
- Study effects of pharmaceutical products on different skin layers by of infrared spectromicroscopy: collaboration the university of Jordan, **Jordan**.
- Effect of environmental pollution on the edible, medicinal and aromatic plants grown in Jordan: faculty of pharmacy, university of Jordan, **Jordan**.
- Investigation on diamond like carbon deposited on Si wafer using the FTIR microscope equipped with a grazing angle objective: collaboration with Ministry of Science & Technology. Baghdad, **Iraq**.
- FTIR analysis on organic samples, which have promising pharmaceutical applications, combinatory analysis using powder diffraction: collaboration with Physics Division, National Research Center Cairo, **Egypt**.

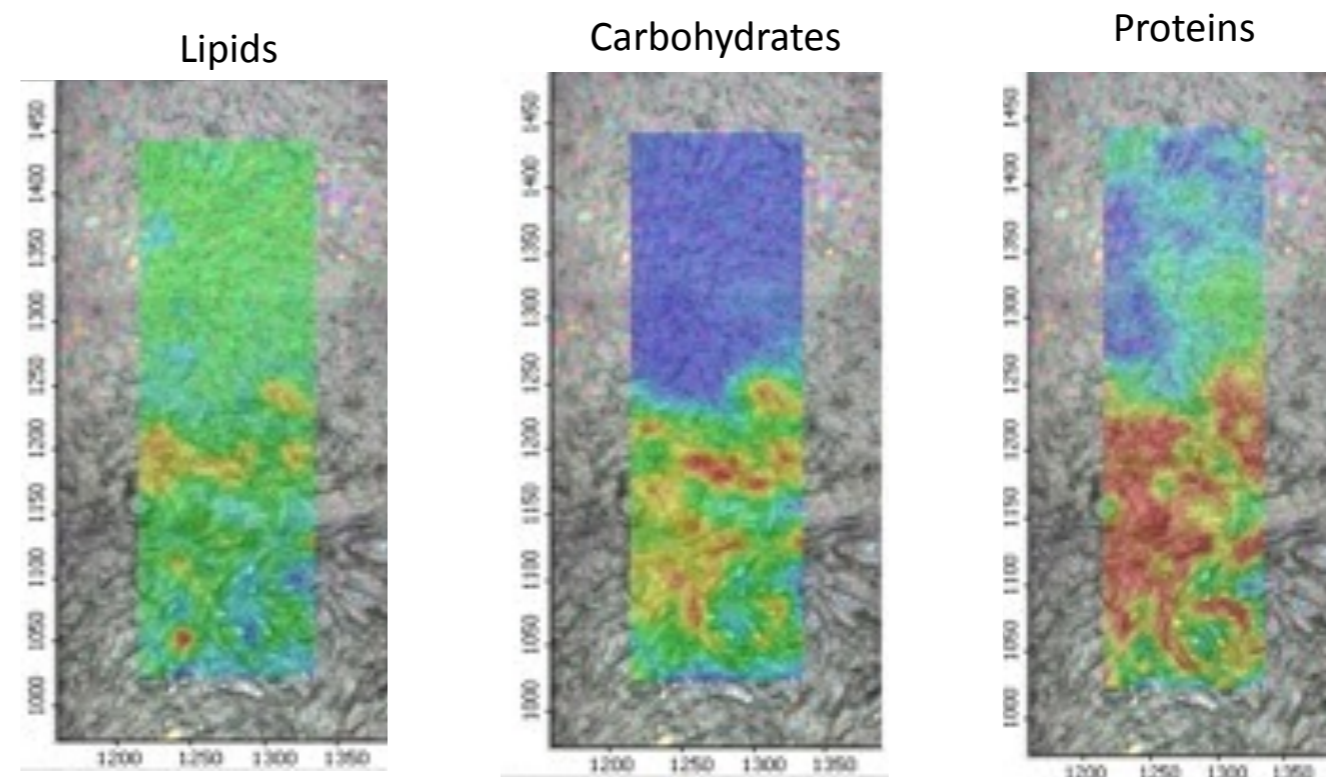
Breast Cancer Investigation

Healthy region

FTIR analysis of breast cancer from Iranian patients: collaboration with University of Mazandaran, Iran.



Chemical Maps showing the distribution of some biochemical components inside the Breast Tissue.



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Optical and μ -FTIR mapping: A new approach for structural evaluation of V_2O_5 -lithium fluoroborate glasses

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First user visit from SESAME to MAX IV

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FIRST USER VISIT FROM SESAME TO MAX IV

2014-09-01



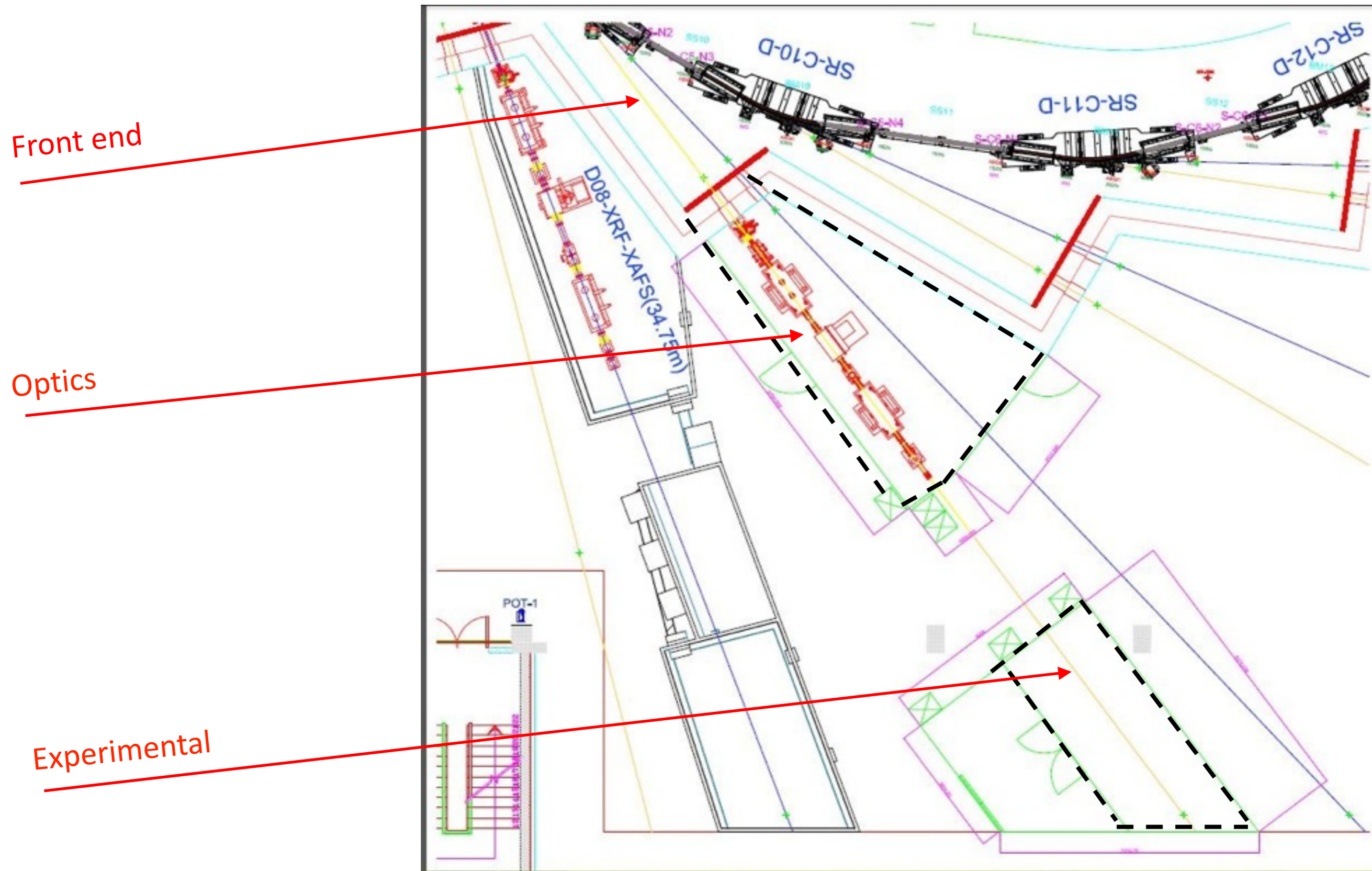
Ibraheem Yousef (SESAME), Enam Khalil (JU) and Randa Mansour (JU) together with Anders Engdahl in the measurement hutch of D7.

SUSAM

Materials Science Beamline

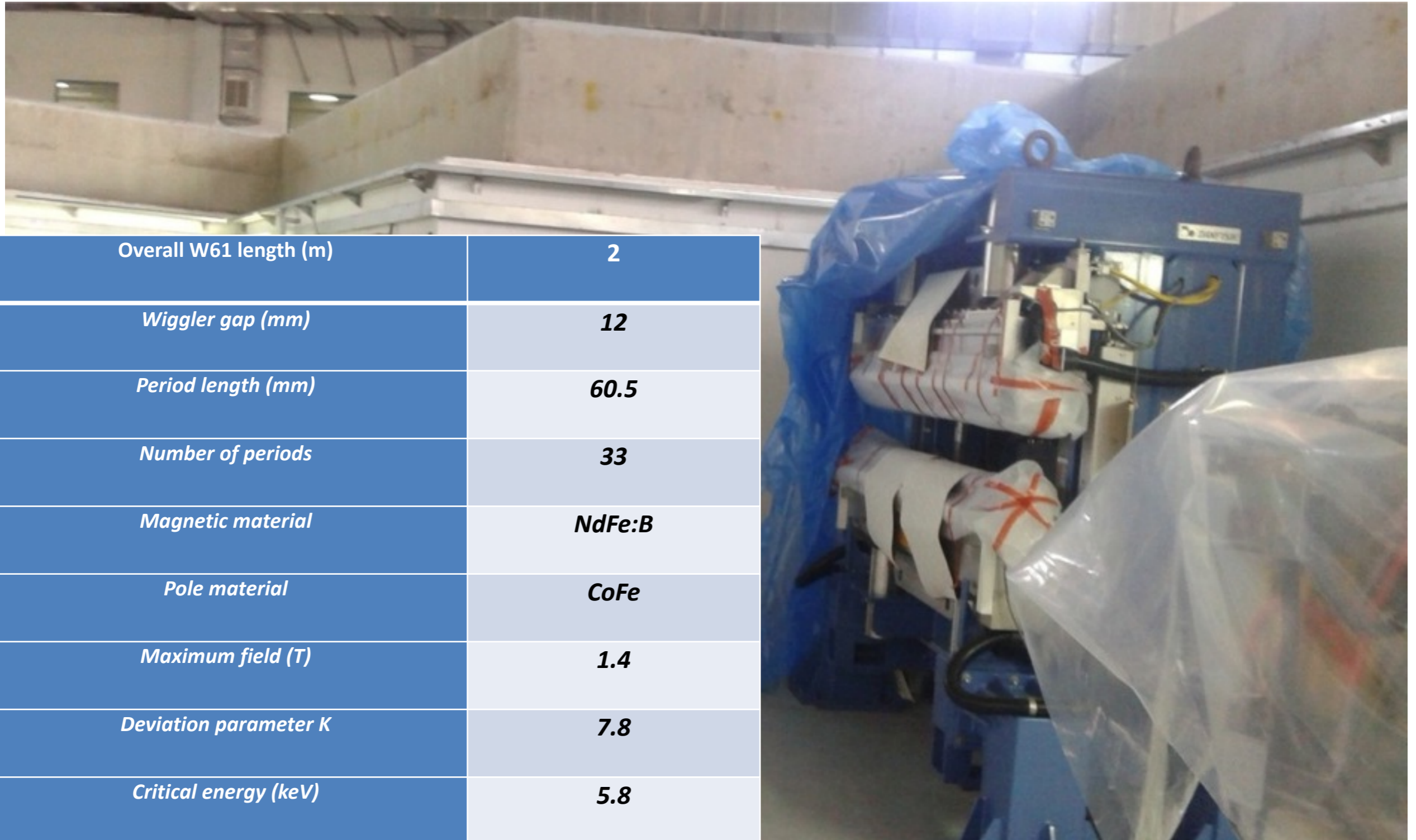
BL scientist in charge: Mahmoud Abdellatif

Materials Science Beamline Layout



Materials Science Beamline

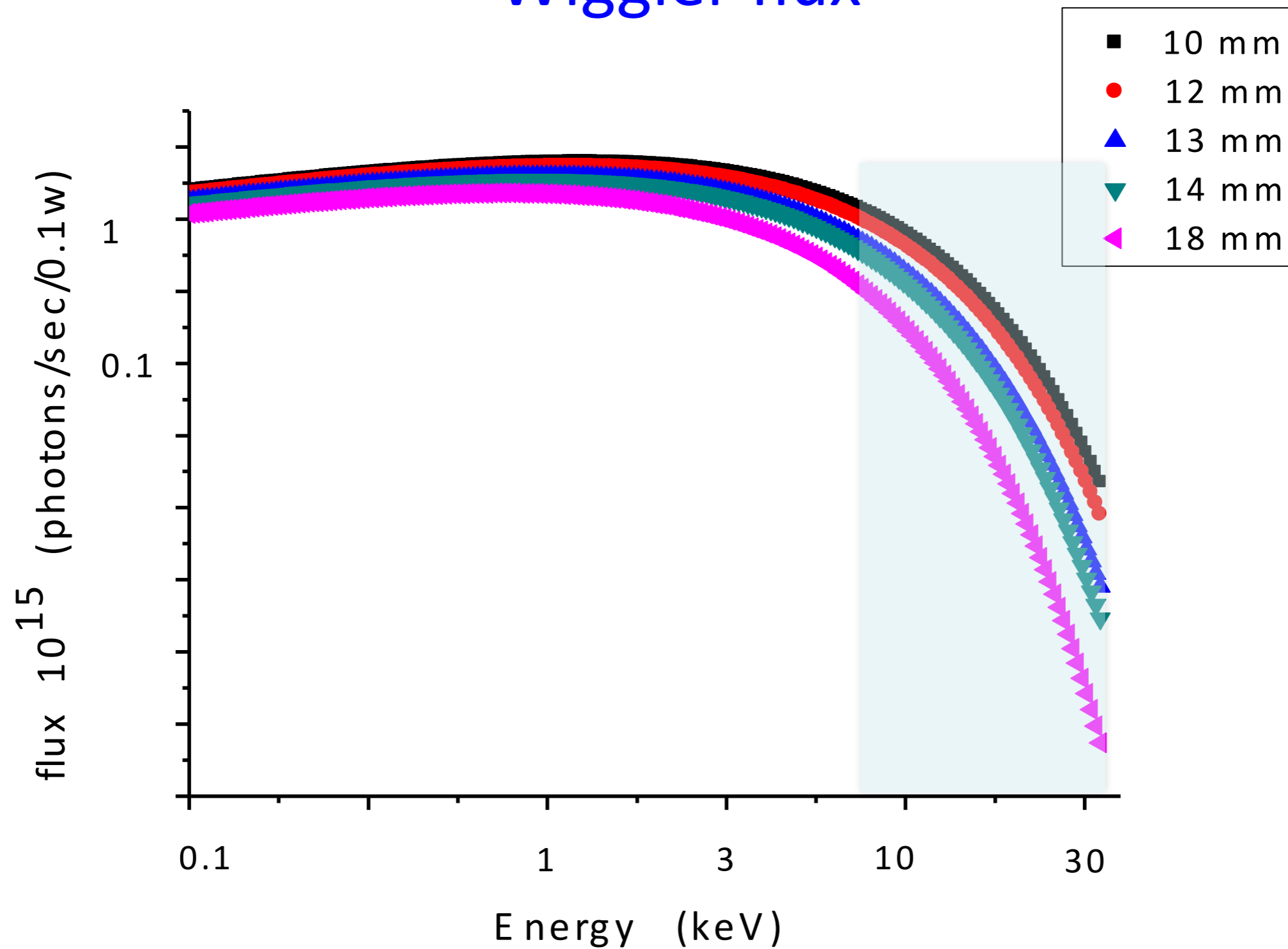
MS wiggler inside the storage ring



Overall W61 length (m)	2
Wiggler gap (mm)	12
Period length (mm)	60.5
Number of periods	33
Magnetic material	NdFe:B
Pole material	CoFe
Maximum field (T)	1.4
Deviation parameter <i>K</i>	7.8
Critical energy (keV)	5.8
Total power @ 400mA (KW)	6.01

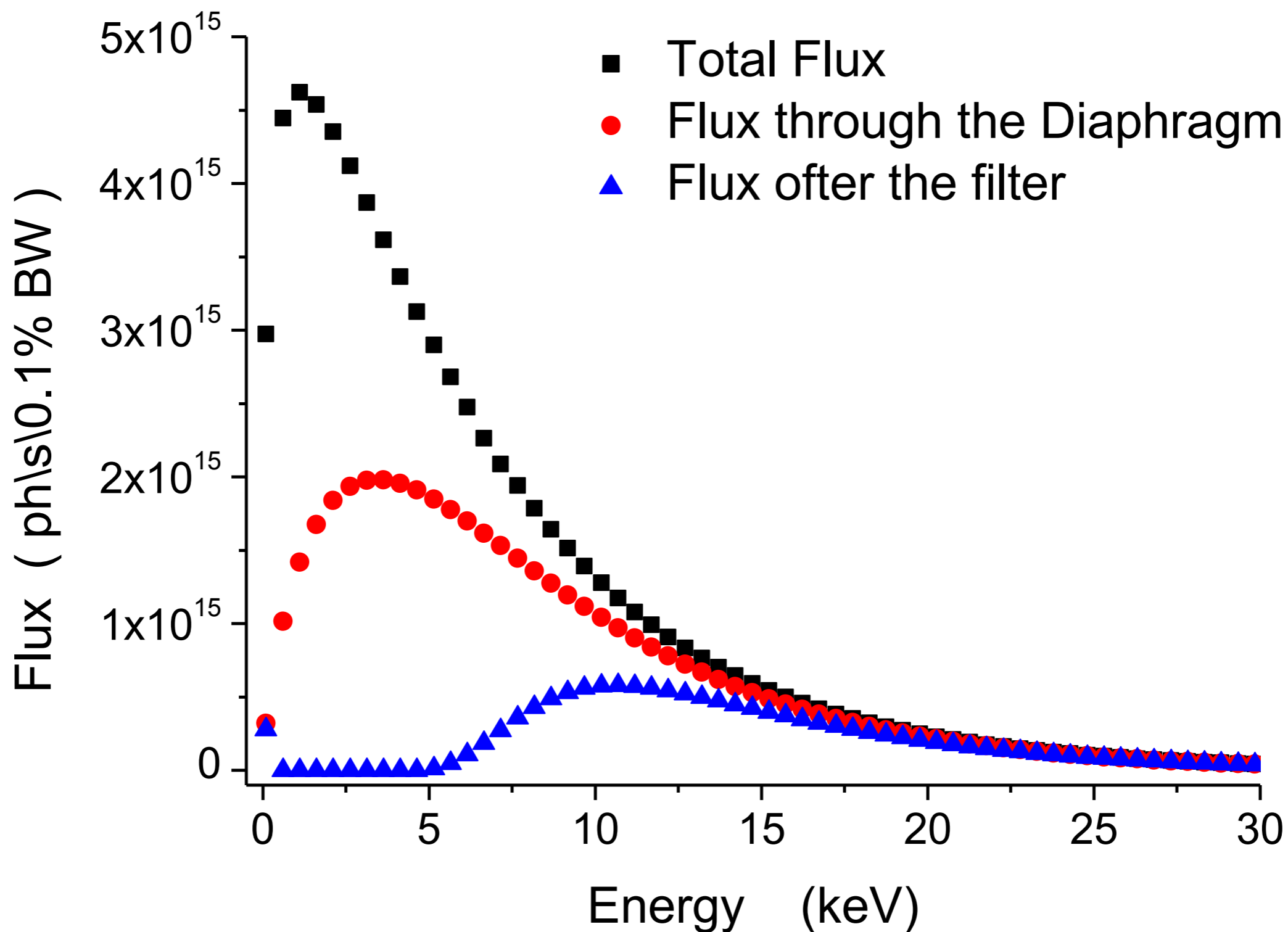
Materials Science Beamline

Wiggler flux



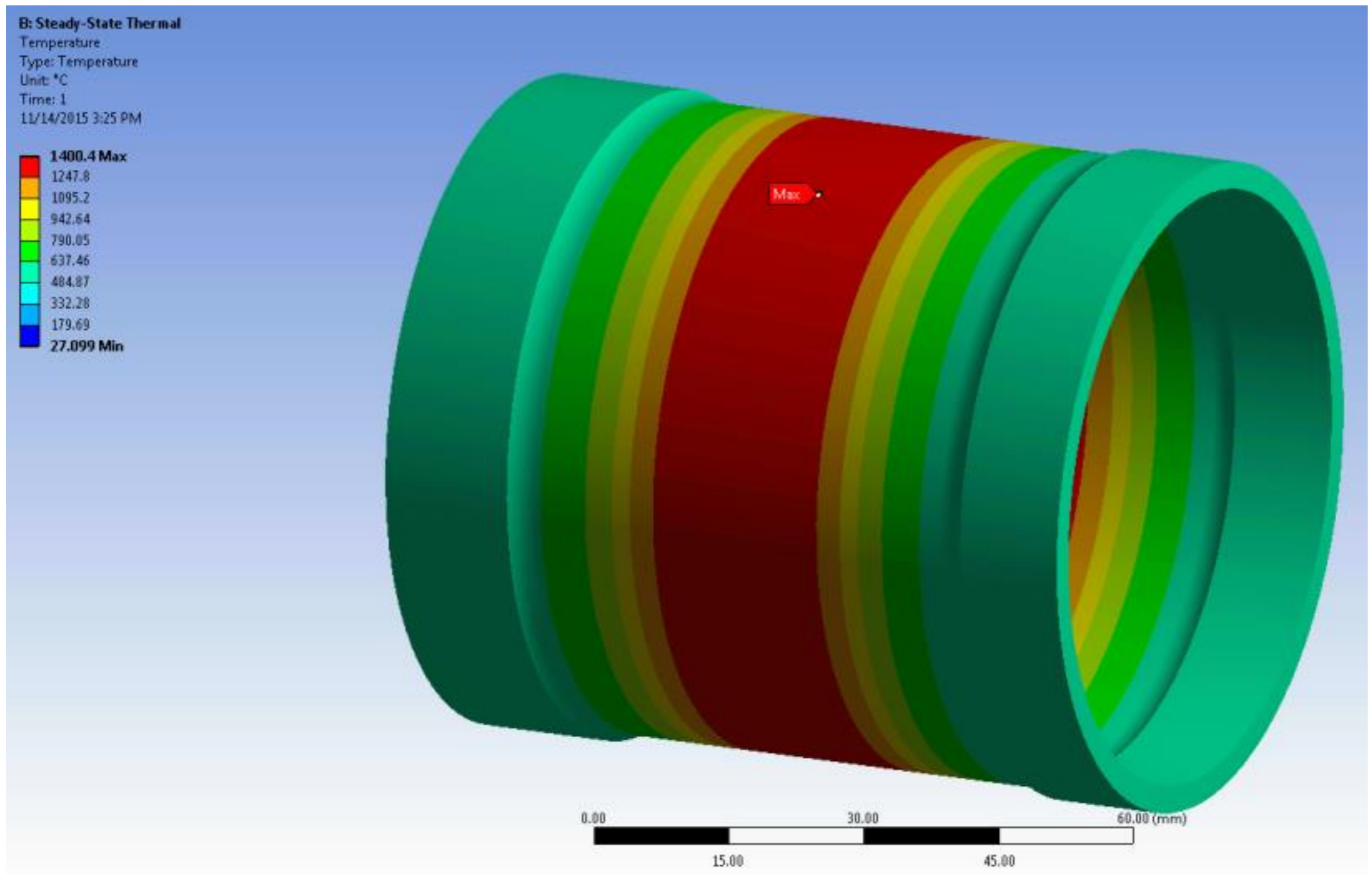
Materials Science Beamline

Glassy graphite filter



Materials Science Beamline

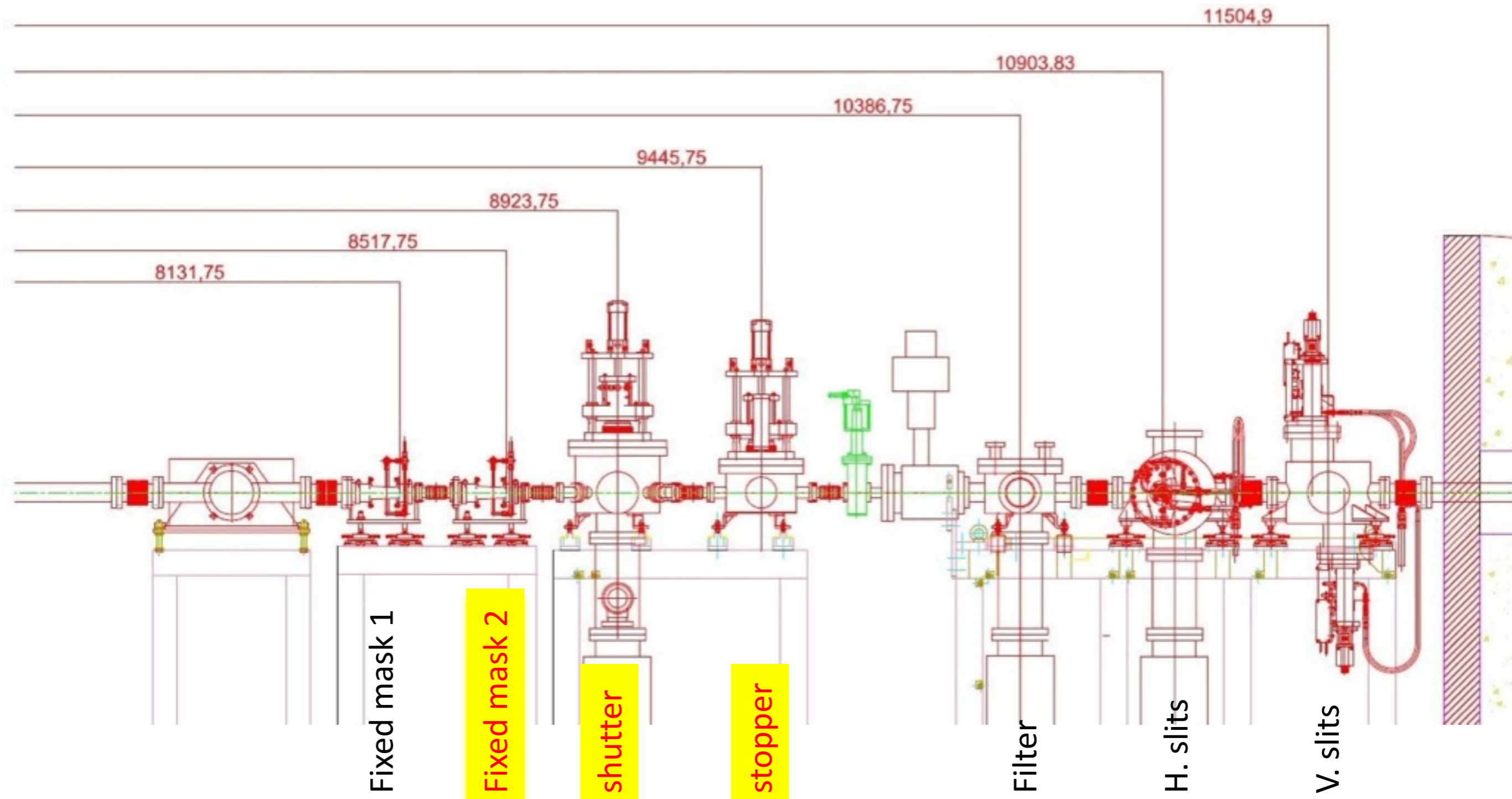
Glassy graphite filter $T_{\max} \approx 1400^{\circ}\text{C}$



Materials Science Beamline

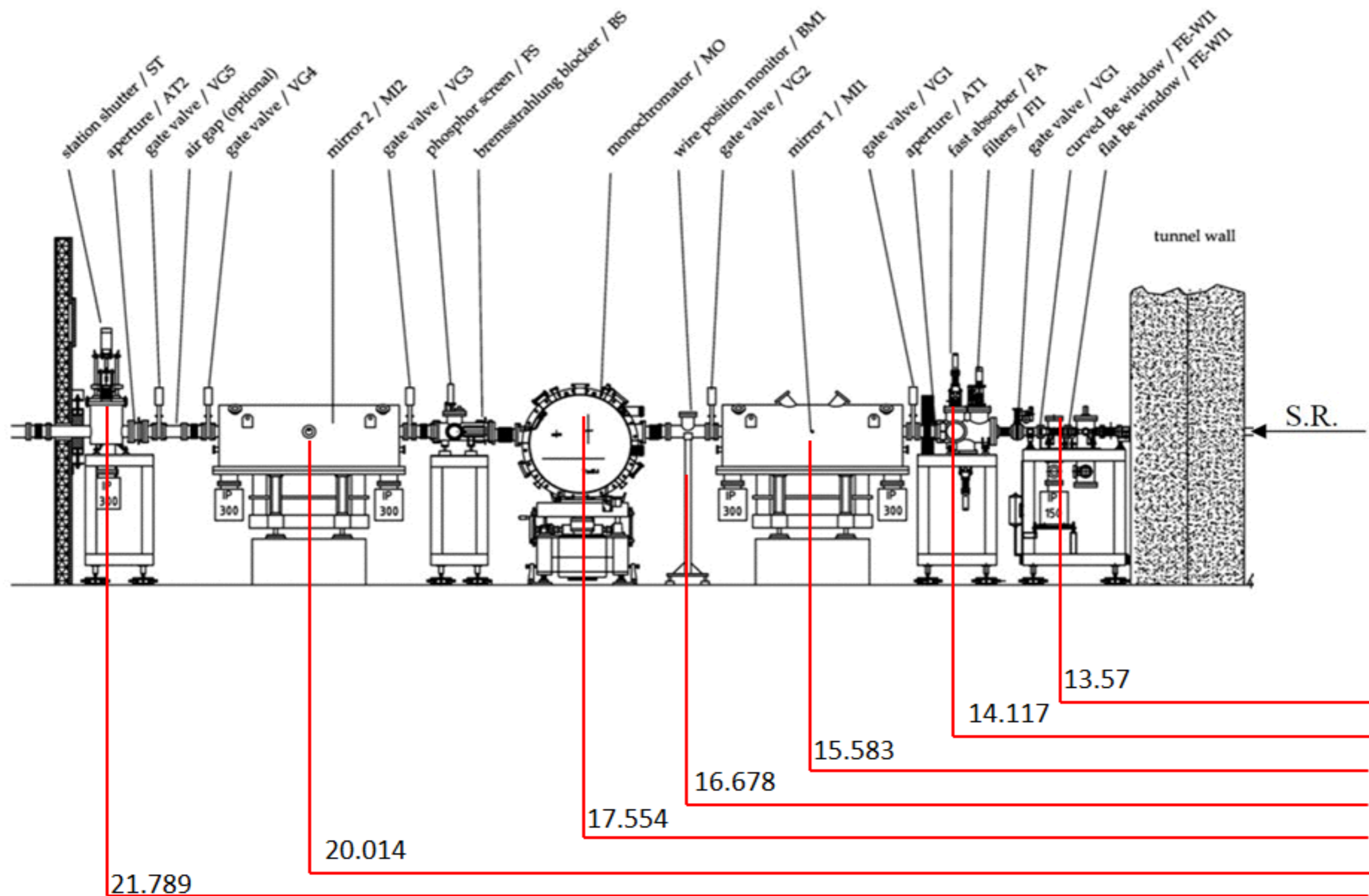
front end layout

1.5 (H) x 0.23 (V) mrad²



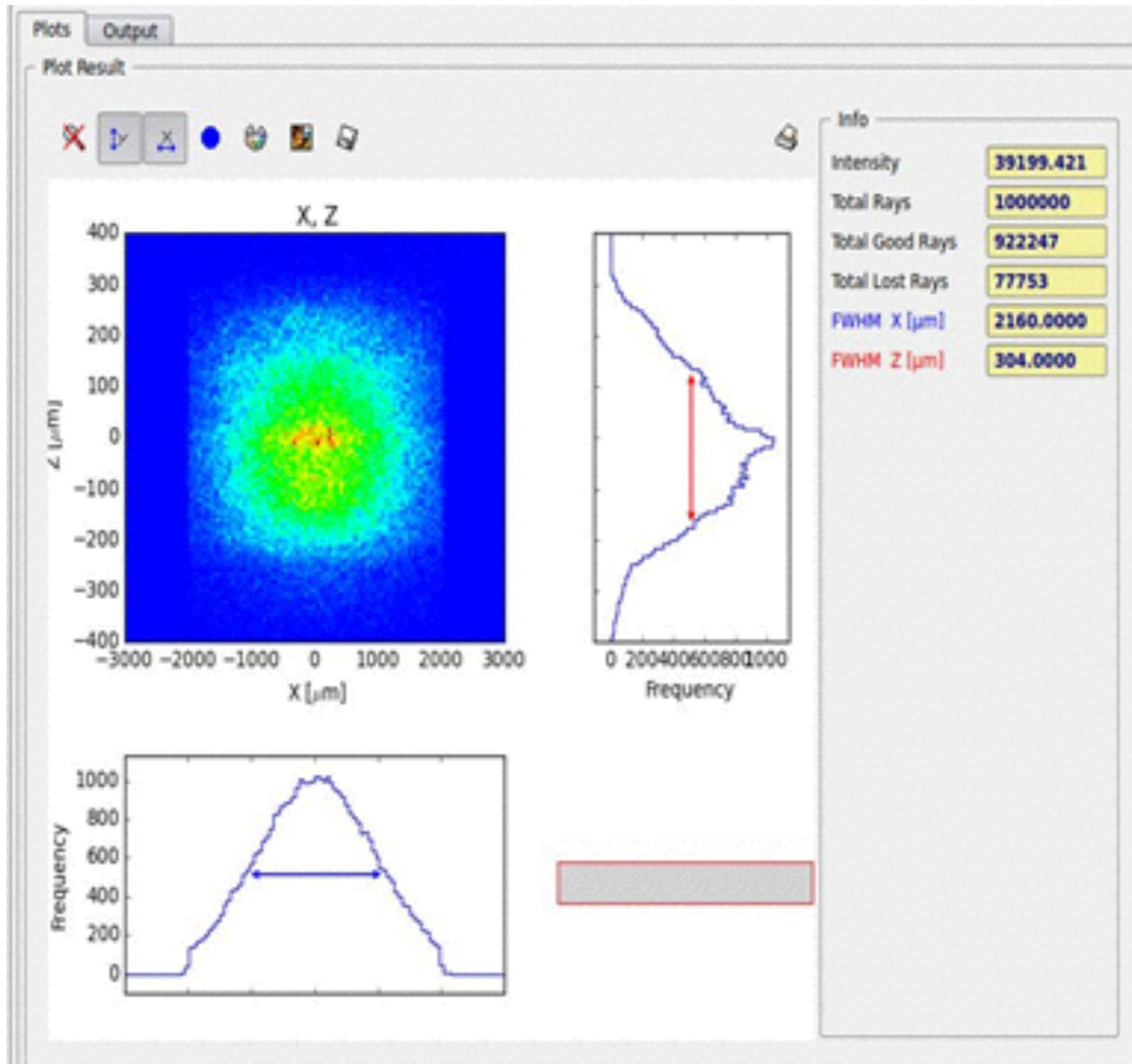
Materials Science Beamline

Optics layout



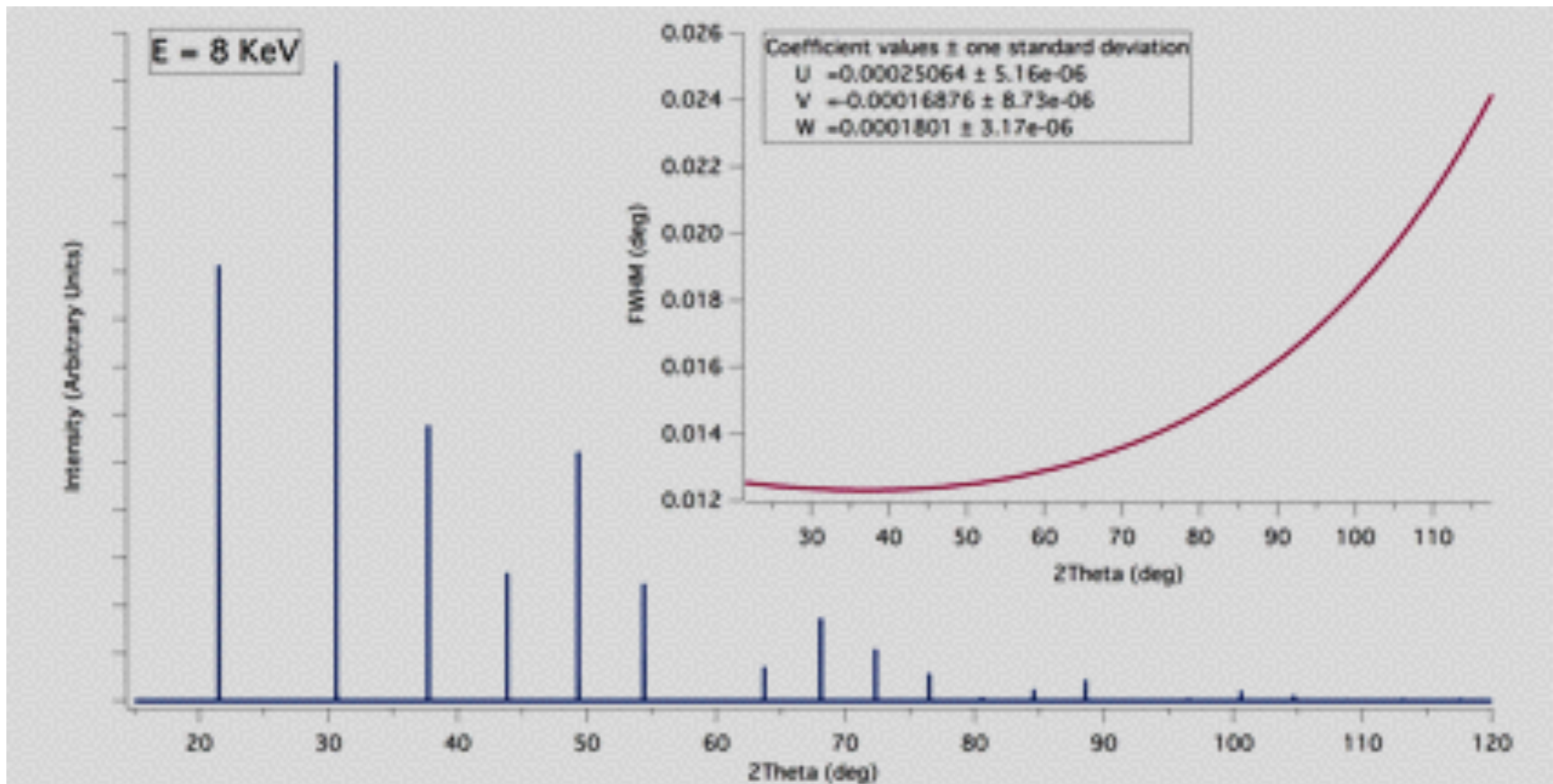
Materials Science Beamline

Spot at the sample (15 keV) $\approx 2.1 \times 0.3 \text{ mm}^2$



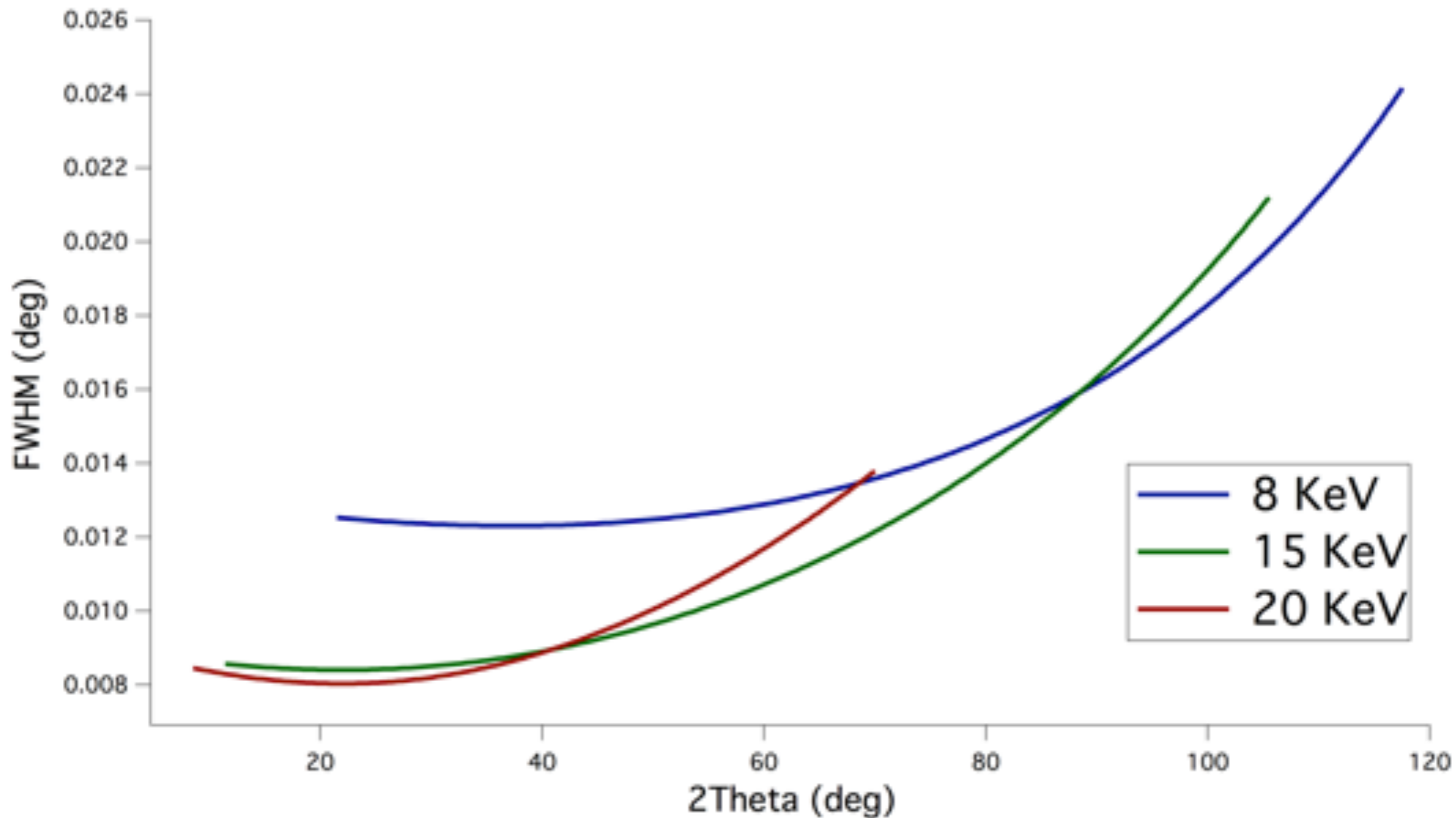
Materials Science Beamline

Simulated instrumental diffraction pattern
(LaB_6 standard – 0.1 mm capillary diameter)



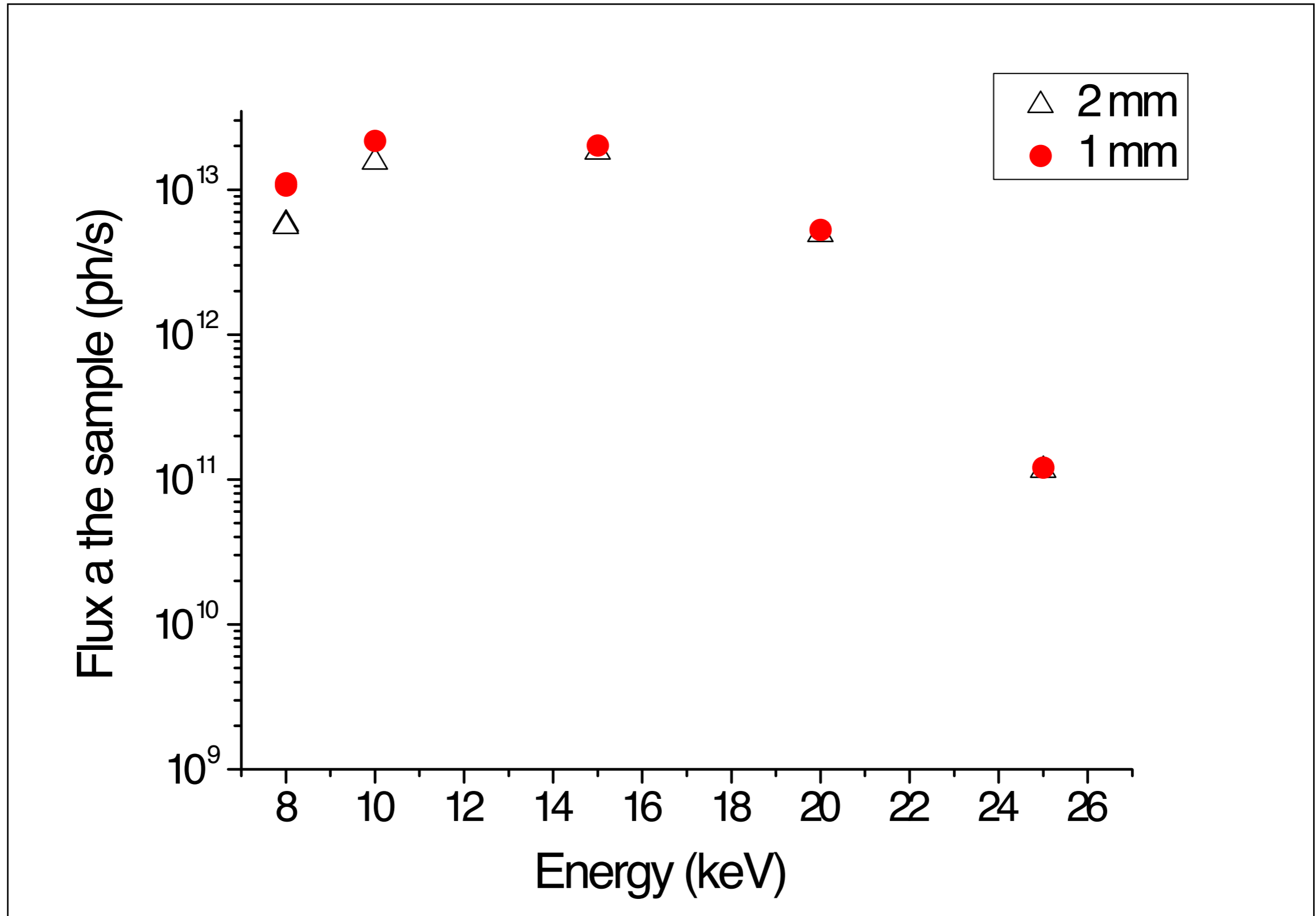
Materials Science Beamline

Instrumental resolution at different Energies



Materials Science Beamline

Flux at the sample (@ 2 and 1 mm filter)



Materials Science Beamline

Pb Hutches

- Pb thickness calculation completed
- Report to be submitted to European experts (Berkvens from ESRF and Casarin from Elettra)
- Hutches to be ordered in early Summer
- Based on previous experience, installation can start in February 2017

Materials Science Beamline

Experimental Station

- Donation of a Dectris 300k detector (to be used for time/temperature dependent studies)
- BL scientist in contact with various European groups to get advise on technical solution

Beamline ready in spring 2018

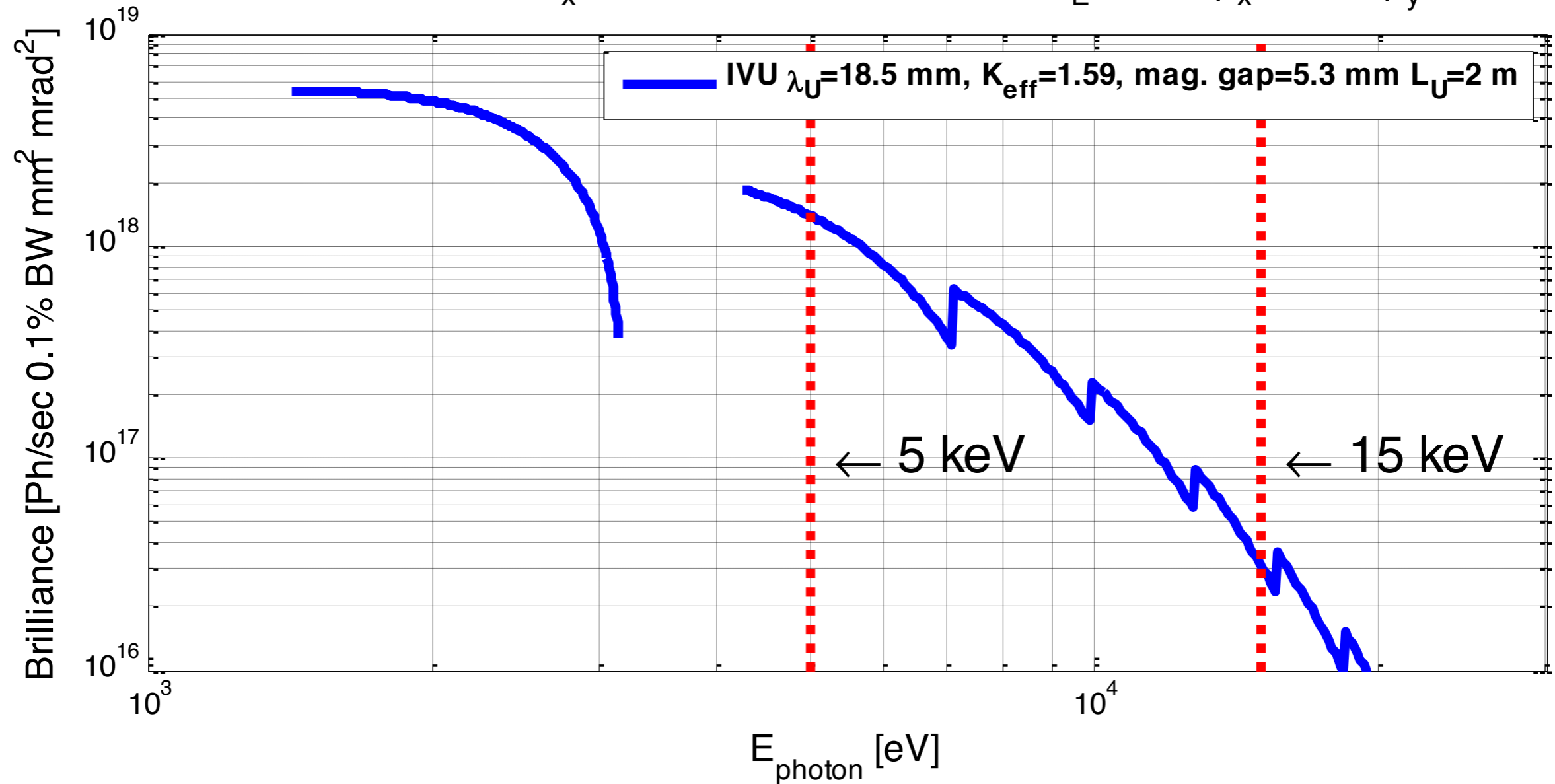
Macromolecular Crystallography

The joint SESAME-Jordan University proposal submitted to the Jordanian Scientific Research Support Fund was approved with a financial support of 1.5 MJOD (~2.1 M\$) in three years. The first allocation of 500 kJOD will be soon available and will be used for the source (in vacuum undulator).

The IVU technical specs are in the final revision stage and were developed by Hossein Khosroabadi (SESAME) in close collaboration with Hamed Tarawneh (MAX IV)

Macromolecular Crystallography: the 18.5 mm IVU

2.5 GeV Ring & 400 mA: $\epsilon_x = 25.7$ nm.rad, Coupling = 1% $\sigma_E = 0.1\%$, $\beta_x = 13.6$ m, $\beta_y = 1.65$ m



Simulated brilliance of the IVU18 for the MX beamline for 18.5 mm period length and minimum magnetic gap of 5.3 mm. The phase error of 2.5 degree has been considered in this simulation.

Remaining Phase I Beamlines

No	Beamline	Energy Range	Source Type	Comments
5.	Soft X-rays	0.05-2 keV	Elliptically Polarizing Undulator	New BL
6.	Small- and Wide-Angle X-ray Scattering SAXS/WAXS	8-12 keV	Bending Magnet	Daresbury 14.2
7.	Extreme Ultraviolet	10-200 eV	Bending Magnet	Daresbury 4.1 & Lure

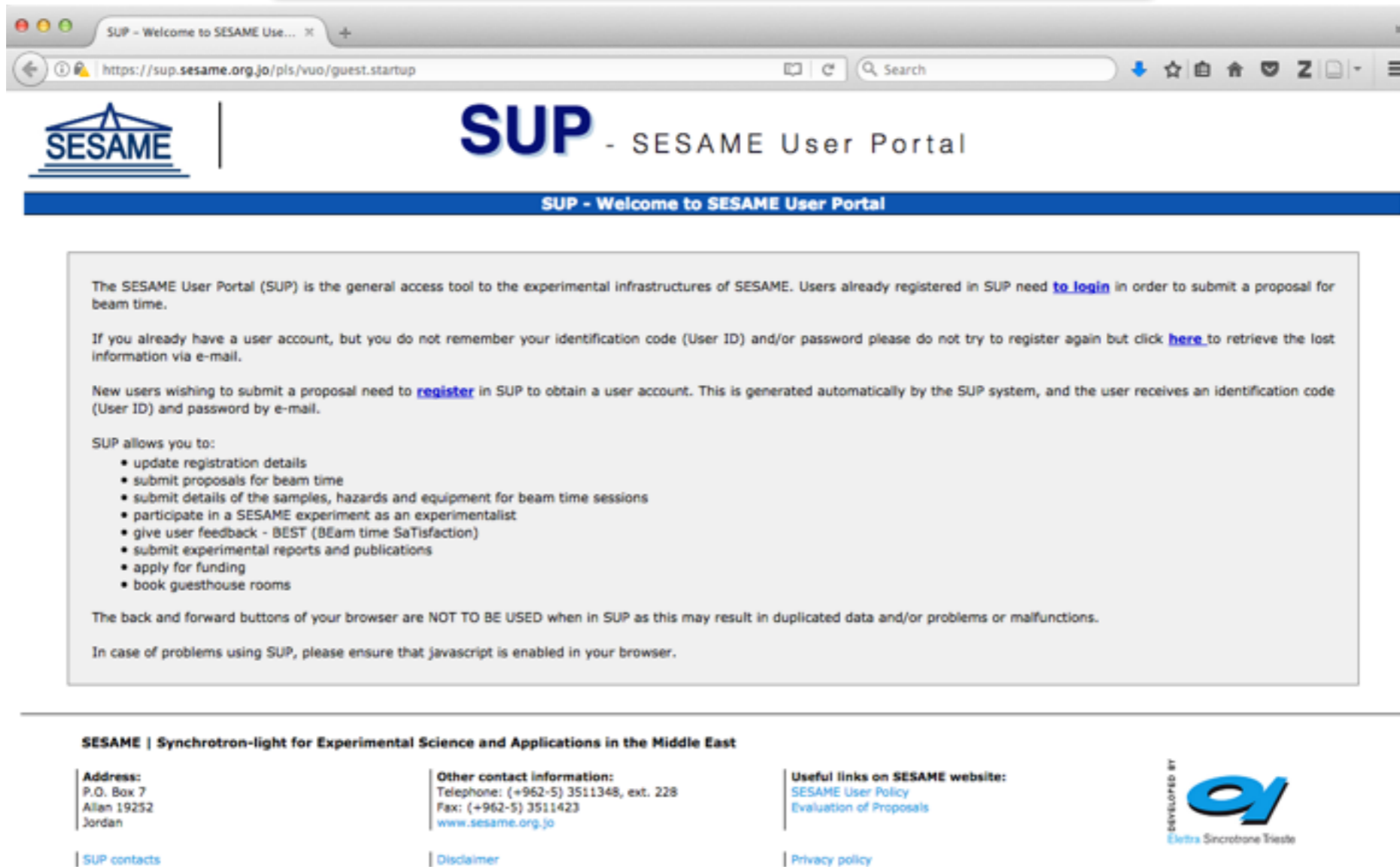
SESAME “Call 0”

Two beamlines (IR and XAFS/XRF) to be ready at the beginning of 2017.

SESAME will be accepting users in the second quarter of 2017 on an trial basis

A “Call 0” will be open in August 2016 for public beamtime.

SUP: the SESAME version of the Elettra VUO



The screenshot shows a web browser window displaying the SUP - SESAME User Portal. The browser's address bar shows the URL <https://sup.sesame.org.jo/pls/vuo/guest.startup>. The page features the SESAME logo on the left and the title "SUP - SESAME User Portal" in the center. Below the title is a blue navigation bar with the text "SUP - Welcome to SESAME User Portal". The main content area contains a welcome message and instructions for users. It explains that the SUP is the general access tool to the experimental infrastructures of SESAME. It provides instructions for existing users (login) and new users (register). A list of services provided by SUP is shown, including updating registration details, submitting proposals, participating in experiments, giving feedback, submitting reports, applying for funding, and booking guesthouse rooms. A warning is given about not using browser back and forward buttons, and a note about enabling JavaScript is included. The footer contains contact information for SESAME, useful links on the website, and a logo for Elettra Sincrotrone Trieste.

SUP - Welcome to SESAME User Portal

The SESAME User Portal (SUP) is the general access tool to the experimental infrastructures of SESAME. Users already registered in SUP need [to login](#) in order to submit a proposal for beam time.

If you already have a user account, but you do not remember your identification code (User ID) and/or password please do not try to register again but click [here](#) to retrieve the lost information via e-mail.

New users wishing to submit a proposal need to [register](#) in SUP to obtain a user account. This is generated automatically by the SUP system, and the user receives an identification code (User ID) and password by e-mail.

SUP allows you to:

- update registration details
- submit proposals for beam time
- submit details of the samples, hazards and equipment for beam time sessions
- participate in a SESAME experiment as an experimentalist
- give user feedback - BEST (BEam time SaTisfaction)
- submit experimental reports and publications
- apply for funding
- book guesthouse rooms

The back and forward buttons of your browser are NOT TO BE USED when in SUP as this may result in duplicated data and/or problems or malfunctions.


In case of problems using SUP, please ensure that javascript is enabled in your browser.

SESAME | Synchrotron-light for Experimental Science and Applications in the Middle East

Address:
P.O. Box 7
Allan 19252
Jordan

Other contact information:
Telephone: (+962-5) 3511348, ext. 228
Fax: (+962-5) 3511423
www.sesame.org.jo

Useful links on SESAME website:
[SESAME User Policy](#)
[Evaluation of Proposals](#)

DEVELOPED BY

Elettra Sincrotrone Trieste

[SUP contacts](#) | [Disclaimer](#) | [Privacy policy](#)



SESAME

More than 150 registered users 55 submitted proposals

Country	XAFS/XRF	IR	Total
COLOMBIA	0	1	1
CYPRUS	1	2	3
EGYPT	6	4	10
FRANCE	0	1	1
IRAN, ISLAMIC REPUBLIC OF	2	3	5
ITALY	1	1	2
JORDAN	2	2	4
KENYA	2	0	2
PAKISTAN	7	4	11
PALESTINIAN AUTHORITY	0	1	1
SWEDEN	1	0	1
TURKEY	14	0	14
TOTAL	36	19	55



Meetings are being organised to address the less present user communities from Members.



SESAME

Distinguished international experts accepted to be members of the SESAME Proposal Review Committee (PRC)

- Sofia Diaz-Moreno (DIAMOND, XAFS/XRF)
- Tom Ellis (Un. of Saskatchewan, IR)
- **Samar Hasnain (Un. of Liverpool, XAFS/XRF), Chair**
- Carol Hirschmugl (Un. of Wisconsin, IR)
- Bruce Ravel (NIST@NSLS-II, XAFS/XRF)
- Lisa Vaccari (Elettra, IR)

Proposals are under evaluation



SUC (SESAME Users' Committee)

The purpose of the SESAME Users' Committee, hereinafter referred to as the "SUC", is to promote research at SESAME by providing a platform for interaction between those who use SESAME for their research and the SESAME management, and for communication between the users and with users of other synchrotron radiation laboratories.

Within this framework:

- the SUC, representing researchers from the SESAME Members, will have a channel through which it may communicate to the SESAME management information on the requirements and wishes of users of the SESAME Members; and
- the SESAME management will have a platform through which it may bring to the attention of users information on current and future plans for the facility.

**The Palestinian representative within
SUC is Jamal Afif Ghabboun
(Bethlehem University)**

OPEN SESAME

Approved 3 year project, starting on January 1 2017

Participant No.	Participant organisation name	Country
1	Installation Europeenne de Rayonnement Synchrotron (ESRF)	FR
2	Consortio para la Construcción, Equipamiento y Explotación del Laboratorio de Luz Sincrotrón (CELLS)	ES
3	The Cyprus Institute (CYI)	CY
4	Deutsches Elektronen-Synchrotron (DESY)	DE
5	Sincrotrone Trieste (ELETTRA)	IT
6	Istituto Nazionale Fisica Nucleare (INFN)	IT
7	Instruct Academic Services Limited (Instruct)	UK
8	Synchrotron-light for Experimental Science and Applications in the Middle East (SESAME)	JO
9	Société Civile Synchrotron Soleil (SOLEIL)	FR
10	European Organization for Nuclear Research (CERN)	CH
11	Centre National de la Recherche Scientifique (CNRS)	FR



SESAME

OPEN SESAME

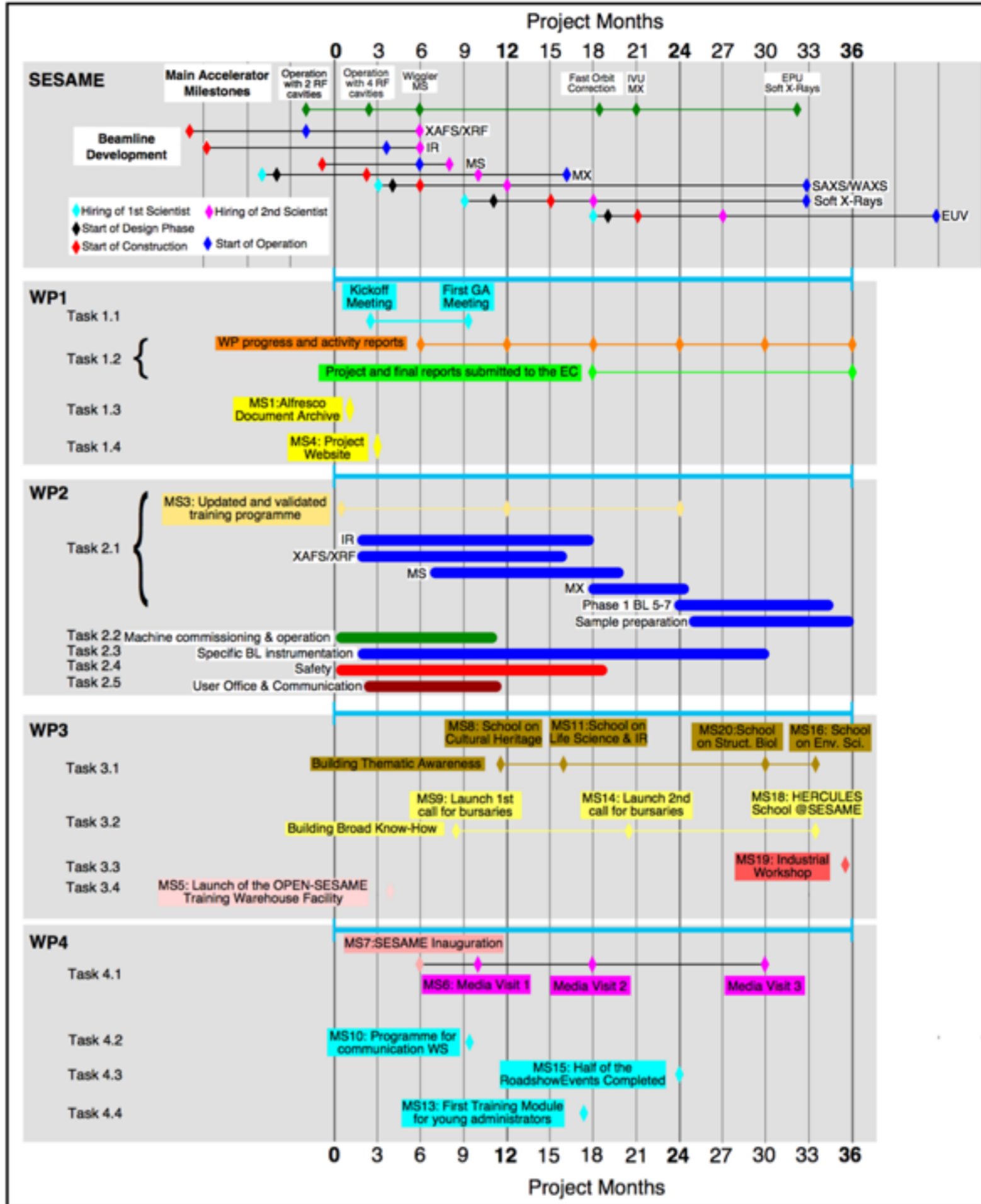
strong links with the SESAME development plans

WP1: Management and dissemination

WP2: SESAME staff training and exchange programme

WP3: Building user capacity in the local science and technology landscape

WP4: Integration of SESAME into public and social-economic landscapes



- Users Meetings, Workshops, Individual Training (Visits, Fellowships..)
- Funding from

International Organisations: IAEA, UNESCO, ICTP, ESRF

External National Organisations & Synchrotron Labs: Brazil, France, Germany, Italy, Japan, Portugal, Spain, Sweden, Switzerland, Taiwan, UK, USA (DoE)

Organisations from Member States: Cyprus, Egypt, Iran, Israel, Jordan, Turkey

Scientific Societies: APS + EPS + IOP + DPG + ACS + NAS

Foundations: Lounsbery

LinkSCEEM Project (Cyprus): ***High Performance Computing (HPC) in the Eastern Mediterranean Region***

Topics include: Accelerator Physics , Beamlines, Scientific Applications

International Support

ANKA, Germany

Brazilian Light Source, Brazil

Elettra, Italy

ESRF, France

Daresbury Laboratory, UK

DESY, Germany

LURE, France

MAX-Lab, Sweden

Swiss Light Source, Switzerland

ALBA-Cells, Spain

Diamond, UK

Taiwan Light Source, Taiwan

SOLEIL, France

UNESCO

DoE, USA

IAEA

ICTP

APS-EPS-IoP-DPG -SIF

JSPS

Portugal

Canon Foundation

Lounsbery Foundation

ICTP - SESAME M. Sc. Fellowships for 2014

The Abdus Salam international center for theoretical physics based in Trieste, Italy under a collaboration program offering two Master Thesis fellowships of six months.

- Call for application published in February
- 11 applications received (5 from Jordan, 6 from Palestinian Authority)
- Process of selecting two candidates is being carried out

Conclusions

There are challenges

Stable financial support; attracting new members from the Gulf and the Mahgreb (**new members are welcome**); making up for the shortage in the human and financial resources of the members; solving problems involving travel restrictions; finding funding for provision of full energy and current, conference centre, full suite of Phase I beamlines,.....

But great progress has been achieved

SESAME is working politically and technically

The training program is building capacity in the region

The voluntary contributions (agreed March 2012) constitute a major step forward and make it possible to plan for commissioning to begin in 2016.

**Further information:
giorgio.paolucci@sesame.org.jo**