

Workshop on how to write a successful beamtime proposal

Rebecka Lindblad, Jacinto Sá, Olle Björneholm

Who are we?

Workshop outline

- General overview over facilities and their beamtime proposal processes
- A typical process of writing a proposal **from the applicant perspective**
- Proposals from the **reviewers perspective**
- Break with coffee
- Practical work on your proposals/drafts

General overview over facilities and their beamtime proposal processes

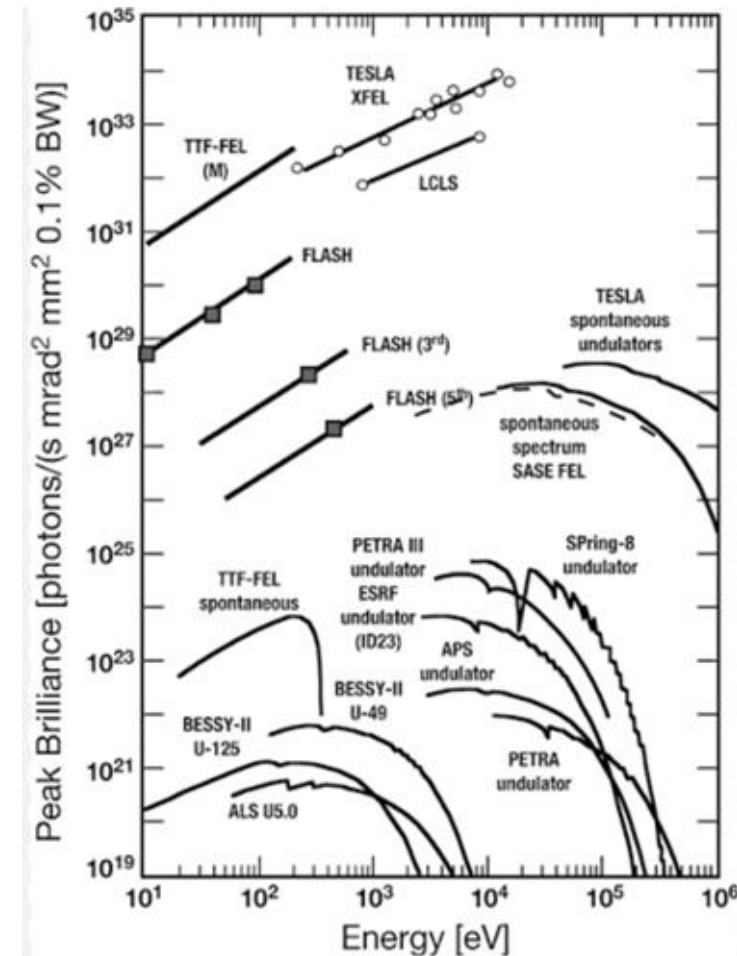
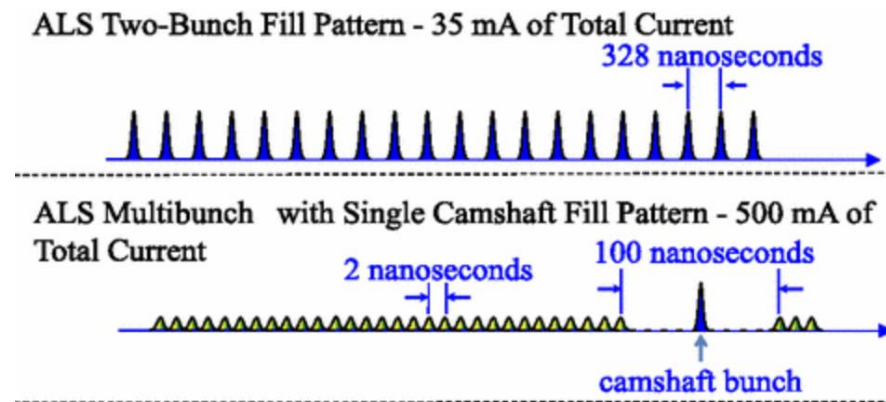
- There are many facilities...



- MAX IV
- DESY
- BESSY
- Soleil
- ESRF
- Diamond
- ALS
- Spring-8
- European XFEL
- Flash
- ILL
- ISIS

General overview over facilities and their beamtime proposal processes

- There are many facilities...
- With different focus/expert area...
- Harder x-rays
- Softer x-rays
- Timing schemes (single bunch / multi bunch)



General overview over facilities and their beamtime proposal processes

- There are many facilities...
- With different focus/expert area...
- With slightly different proposal processes...
- 2 open calls per year
- Every 2 months
- Submit a new proposal every time
- A proposal can be active for a longer time period and beamtime can be requested more than once
- Beamtime period x months after proposal deadline

General overview over facilities and their beamtime proposal processes

- There are many facilities...
- With different focus/expert area...
- With slightly different proposal processes...
- Access modes...
 - Standard access
 - Long-term access
 - Fast access (1-2 shifts)
 - Feasibility test
 - Might not require a full proposal, contact beamline scientist.
 - Special access for Swedish users

General overview over facilities and their beamtime proposal processes

- There are many facilities...
- With different focus/expert area...
- With slightly different proposal processes...
- Access modes...
- And proposal guidelines/templates
- Template to download
- A "shift" can be 4h, 8h, 12h, 24 h...
- One proposal for more than one beamline/experiment

Multi-experiment proposal

- ReMade @ ARI
 - Remade-project.eu
 - Proposal to ReMade and not the facility
 - The facility will grant a certain number of shifts for ReMade
 - Not all facilities and beamlines are included in this initiative

ReMade@ARI (**RE**cyclable **MA**terials **DE**velopment at **A**nalytical **R**esearch **I**nfrastructures) is funded by the EU Commission's Horizon Europe programme and co-funded by UK Research and Innovation (UKRI) and by the Swiss State Secretariat for Education, Research and Innovation.

The project provides scientists who are working on the design of new recyclable materials with analytical tools that enable them to explore the properties and the structure of their material in smallest details up to atomic resolution. ReMade@ARI commits to leverage the development of innovative, sustainable materials for key components in the most diverse sectors, such as electronics, batteries, vehicles, construction, packaging, plastics, textiles and food on an unprecedented level. It will be the central hub in Europe for all sectors and research areas in which new materials for a circular economy will be developed.



a hub for materials research

Financial support

- Some facilities offer financial support
 - Typically 1-2 persons
 - Covers partially travel/housing
- Nephews (*beamtime.eu*)
- MAX IV will open up for financial support for Swedish users
- Center for photon science offer some financial support for the **very first** beamtime

TransNational Access

We aims at supporting scientists by providing them free access to facilities, equipment, expertise, services and resources that they do not usually have access to.

A typical process of writing a proposal

1. A research question that you can't answer without tunable x-rays / FEL / neutrons / a specialised experimental setup

A typical process of writing a proposal

1. A research question that you can't answer without tunable x-rays / FEL / neutrons / a specialised experimental setup
 2. Finding the right facility and beamline
 - Available experiment setup
 - Energy range
 - Beam spot/resolution
 - Sample requirement
-
- Can you submit the same proposal to multiple facilities?

A typical process of writing a proposal

3. Contact the beamline scientist

- Describe very shortly your sample and proposed experiment
- Ask about feasibility and estimated time it will take

Some facilities require that you have contacted the beamline scientist in advance.

They typically give valuable advice.

3 b) Discuss with colleagues who has done similar experiments

A typical process of writing a

4. Download the proposal template

Use the template and follow the instructions in it!

(different facilities have different templates and instructions)

General guidelines for a description of a NORMAL proposal

- The page limit for NORMAL proposals is 2 pages (1 MB file size).
- Please choose font size 12pt.
- DUO allows uploading figures / images in 'step 5' of the proposal submission, you can include them here or there. Please add them only once.
- The DUO system asks for a list of articles resulting from previous work at MAX-lab/MAX IV in 'step 1' of the proposal submission, don't add these publications here.

The proposal should follow the structure below:

A) Goal of the experiment

... Describe shortly the goal of the experiment.

B) Scientific background

... Summarize the scientific background of the project.

C) Experimental method(s), including preliminary results and requirements

... **For all beamlines please** describe relevant preliminary results, how the experiment will be performed, measurement strategy, etc.; state the requirements regarding e.g. spatial resolution, energy resolution, specific equipment, detectors, etc.

... **For HIPPIE and SPECIES APXPS** please add: Type of AP cell, List of gases to be used in AP cell, Conditions: pressures and temperatures to be used in AP cell

D) Results expected and their impact on the respective field of research

... Indicate which results are expected, how they will contribute to the field.

E) Relation to previous experiments at MAX-lab / MAX IV or at another facility

... Describe shortly the relevant relationship to previous experiments at MAX-lab/ MAX IV or elsewhere.

F) Justification of the beamtime and beamline

... Justify the estimated amount of beamtime required as well as the choice of beamline.

G) References

... Provide a short list of key references relevant to the experiments proposed.

If these are own work from former experiments at MAX-lab/MAX IV you need to add them under 'Scientific activity (publications) of the proposers' in step 1 of the proposal submission. Own former work at MAX IV that is not related to this proposal shall not be listed here.

A typical process of writing a proposal

5. Write the proposal text

- 2-3 pages
- Clear scientific case
- Convincing preliminary data
- Clear experimental plan

Abstract, background and motivation should be understandable by a non-expert in the field.

Experiment description should be as detailed as possible

A typical process of writing a proposal

5. Write the proposal text

It needs to be clear that:

- you **need synchrotron radiation**
- there is scientific relevance/**novelty**
- the experiment is **feasible**
- **you** can do the experiment and analyse the data
 - preliminary data
 - references

A typical process of writing a proposal

5. Write the proposal text

Only include a few key references.

The references should support:

- The novelty of the scientific question.
- The feasibility of the proposed experiment.
- Your own expertise
 - ability to do the proposed experiment
 - quality of samples

A typical process of writing a proposal

5. Write the proposal text

Preliminary data are important.

- As similar as possible to the proposed experiment
 - Need for synchrotron radiation
 - Feasibility
- Shows quality of samples
- Shows your own expertise

A typical process of writing a proposal

5. Write the proposal text

Experimental plan

- Justify the selected beamline/end station
- Write how to do the experiment, what edges/elements/core levels to measure
- How samples are treated before/during the experiment
- Justify the number of shifts you apply for
 - Show calculations of time estimations

A typical process of writing a proposal

6. Fill in all required information in the submission system.

- Applicants
- Energy range, spot size, experimental station, type of detector.
- Declare samples and chemicals
- Need of gases, liquid nitrogen?
- Need of support labs?
- Link to previous proposals and experimental reports.
- Add references to your published papers.
- Preferred/unfeasible dates
- Number of requested shifts
- Check the details for the beamline in the webpage and ask beamline scientist if unclear.

A typical process of writing a proposal

7. Submit proposal

Wait a couple of months...

- If accepted, start directly to plan the beamtime
- If rejected, read carefully the comments from the review panel and update according to these comments before applying again

From the reviewers perspective

1. Beamline scientist check feasibility
2. Feasible proposals to review panel
3. Each proposal read by X panel members with matching expertise (and no conflict of interest).