

# Prepare a (successful) Proposal



**PDF School 2018**  
NSLS-II Pair Distribution Function School

Hosted at Brookhaven National Laboratory  
September 17-19, 2018

PDF (28-ID-1)  
NSLS-II

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The banner features a large, complex scientific instrument with a yellow frame and white components, set against a blue background with light rays. The instrument is labeled 'PDF (28-ID-1) NSLS-II'. Below the main text is a navigation menu with links for 'Homepage', 'Registration', 'Agenda', 'Course & BNL Information', and 'Contact Us'.

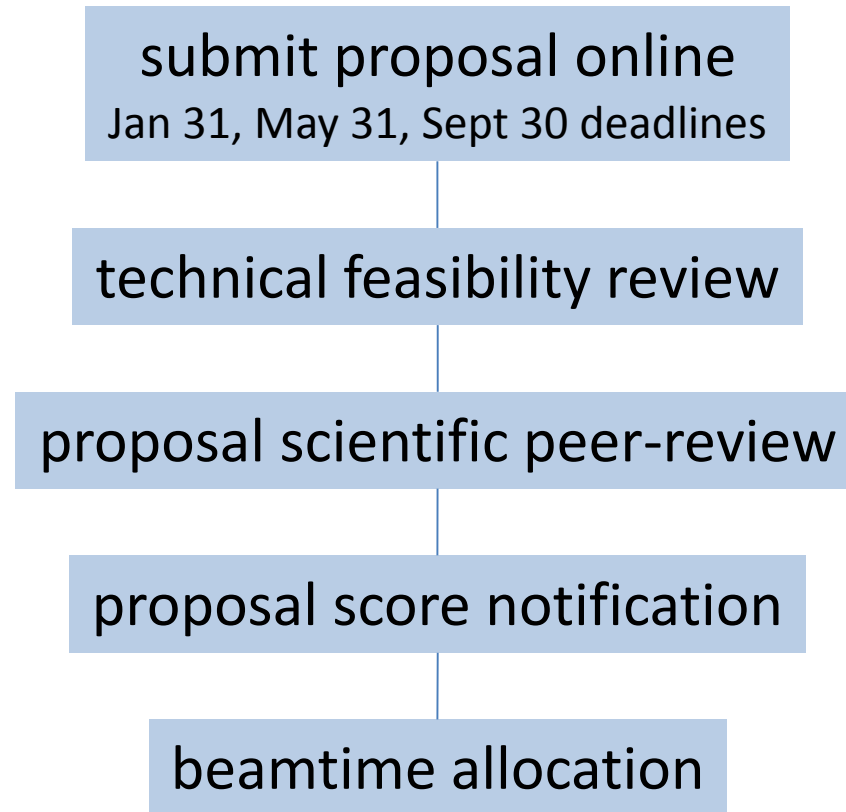
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**September 17, 2018**

# Proposal Submission Flowchart

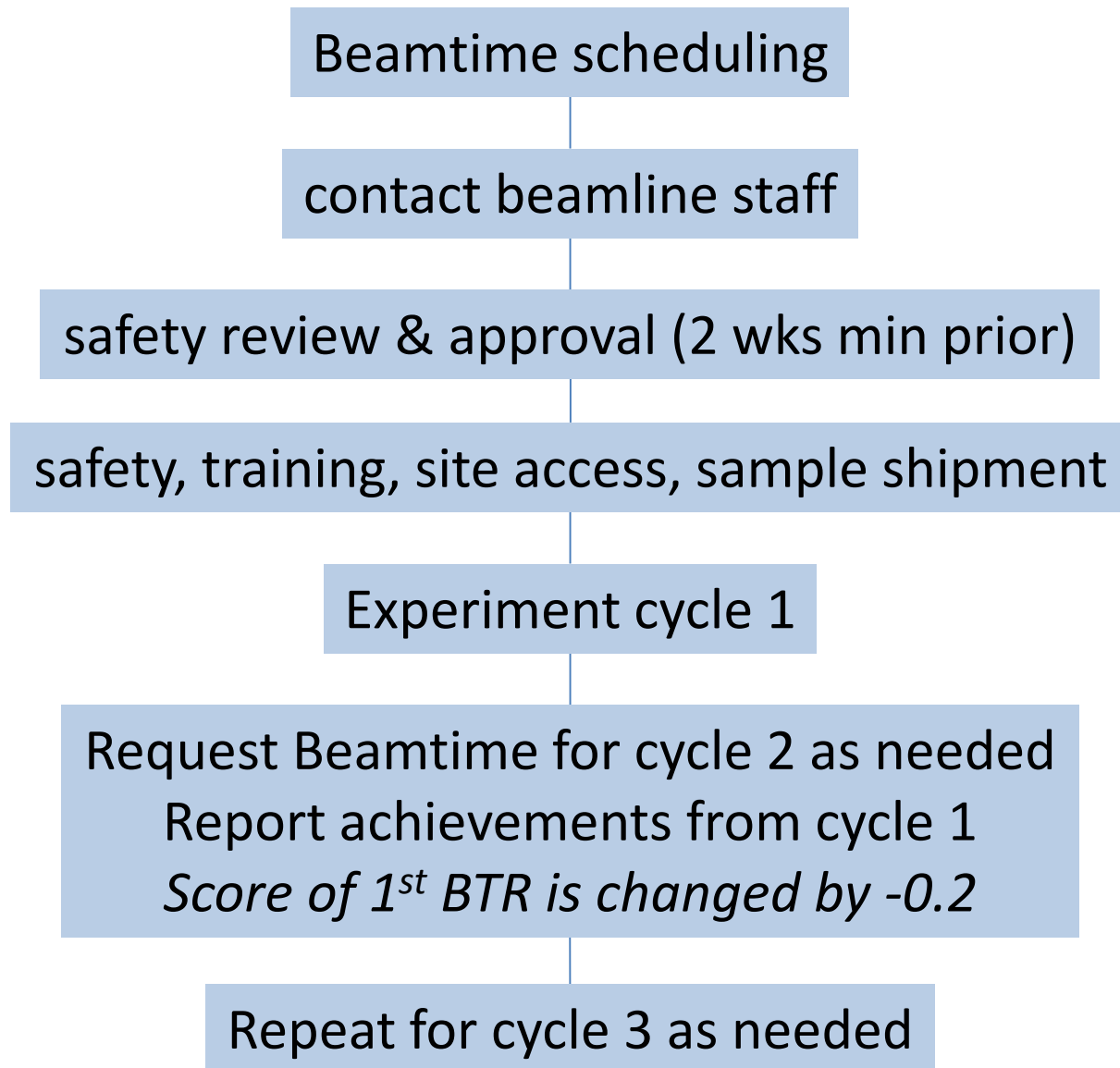


# Overview of the Proposal System

- Proposal Review Panels (PRPs), categorized first by technique, and/or by broad science area, e.g.: *High Energy Diffraction, Microscopy & Imaging, X-Ray Spectroscopy*
- Proposals can describe a single experiment or a set of experiments that span a period of up to 1 year (3 cycles).
- Each proposal is reviewed by 2-3 reviewers who provide a rating between 1 and 5 (1 high). An average proposal rating lower than ~1.7 is required for beam time.
- Beam Time Request (BTR) is needed for each cycle (proposal is current, already scored, BTR competes against all other current proposals and BTRs).
- Proposals not allocated beam time get a 0.2 rating improvement for first BTR.

Proposal Due Date	Beam Time Allocated	Scheduling Cycle
September 30, 2016	November 11, 2016	January-April 2017
January 31, 2017	March 14, 2017	May-August 2017
May 31, 2017	July 12, 2017	September-Dec. 2017

# Beamtime Allocation Flowchart



# First Step

- Visit NSLS-II website, the beamline web site and wiki pages:

- <https://wiki-nsls2.bnl.gov/beamline28ID2/>

- Review criteria
- Proposal types
- Deadlines
- Etc

→ identify the beamline(s) that can be used for your project

# Next Step

- It is recommended you contact Beamline Staff
- Discuss with the Beamline Scientist:
  - Does the beamline meet the specifications required for your project?
  - Does your project require specific sample environment, additional instrumentation or a non-standard beamline configuration? Can the instrumentation be supplied or the beamline reconfigured?
  - The amount of beam time that would be required to complete your project (cycle 1, over the proposal lifetime).
  - Can a preliminary feasibility check be made on your sample?
  - ....

# Title and Abstract

- The content of proposals is treated as confidential except for the proposal title and abstract. These are sometimes used in reports to funding agencies.
- Abstract should provide a brief overview of the project without revealing any experimental details that you want to keep private.

# Is this a continuation proposal of one that has expired

- Proposals are good for 1 year. If the project extends beyond this time, a new proposal must be submitted.
- In this section, list the prior proposal number(s) and briefly describe any progress that was made. Be sure to list any publications based on work from the expired proposal(s).



# Is this proposal a revision of an existing proposal?

- The typical proposal cutoff score is  $< 1.7$
- If the score is not sufficient to get beam time in future cycles (*e.g.* a score  $> 2.0$ ), you are advised to submit a new proposal, addressing the reviewers' comments.
- Multiple proposals for the same project are not permitted.

# Scientific Importance of proposed experiment

- Background - provide sufficient background information so the reviewer, who may only have a general knowledge of your subfield, can understand the scientific issues that your project addresses.
- Impact - describe the expected scientific and/or technological and/or educational impact that your results will have.

# Why do you need SR and the beamline you have chosen for your experiments?

- You need to convince the reviewer that your experiment could not be done on a lab machine or at another facility.
- Reasons might include:
  - Your experiment requires a unique property of synchrotron radiation such as, high energy (PDF), high flux (for weakly scattering samples), high brightness (small beam area), or energy tunability (for spectroscopic measurements).
  - Your experiment requires high through-put to characterize a large number of samples.
  - Or high acquisition rates, *etc*

# Describe team's relevant prior experience and list refereed journal articles resulting from previous beam times

- Prior synchrotron experience is an important criteria used in rating proposals. The proposal reviewers are looking for evidence that you have the experience to carry out a successful experiment.
  - New users – It's recommended that new synchrotron users initially collaborate with an experienced user or beamline staff. Describe this mentoring relationship here.
- Reviewers are looking for evidence that your previous use of beam time resulted in high-impact publications.
- Reviewers are also looking for publications that establish your expertise in the topic of the proposed project.

# **Provide any relevant literature references that will aid in reviewing this proposal**

- List any publications that will help the reviewers evaluate your proposal.
- These do not need to be your publications.

# Research Description

- Provide an outline of what experiments you will be doing over (1) all the cycles of the project in moderate detail and (2) the next cycle in complete detail.
- This section serves two purposes:
  - Indicates to Reviewer the likelihood that your experiment will provide the information that you're anticipating and whether the proposed experiments justify the requested amount of beam time.
  - Indicates to the Beamline Local Contact what instrumentation and beamline configuration is needed for your run (feasibility review).
- The research that receives the highest ratings are ground-breaking experiments that do not give the impression of ill-defined 'fishing expeditions' or the next in a 'series' of similar measurements.
- Results using complementary techniques.
- Figures and photos, which often are more effective than words, should be added to the proposal in a JPG file.
- Supplementary information (no article) as attachment (keep the proposal focused)

## Beam Time Request

**Describe accomplishments from previous experiments on the current proposal (if applicable) and the proposed experiments for the requested cycle, including a justification of the time requested**

- If you've already been allocated beam time on this proposal in a previous cycle, describe your progress here. This will help the allocation panel gauge whether you have been productive prior to allocating more time.
- Also, provide detailed description of the experiments you will be doing during the upcoming cycle. Be sure to include a detailed justification of the amount of beam time requested (e.g. set up time, how many samples, how much time per sample, etc.).

# Safety Approval Form

- Once beam time is allocated, each proposal is accompanied by a Safety Approval Form (SAF).
- In the Safety Approval Form you describe any hazards associated with your proposed experiment (chemical, electrical, environmental). You also provide the names of all the experimenters involved with the project.
- A SAF should be submitted at least 10 working days prior to the start of beam time. If hazards exist, the SAF should be submitted well in advance of the beam time.
- The SAF is valid for ONE beam time cycle.



# Last Step before Submission

- Review by the lead beamline scientist: If you are a new synchrotron user, it is strongly suggested that you ask the beamline staff to review and critique your proposal. But don't send it at the last minute; they get a lot of such requests!

# Guidelines

- Scientific merit
- Goals and scope of work: be specific, well thought-of, *i.e.* no ill-defined ‘fishing expeditions’ or the next in a ‘series’ of similar measurements.
- Likelihood of success:
  - Team’s experience and track record
  - Homework (lab XRD, TEM, NMR, Raman, ATG, modeling, *etc*)
  - Samples (synthesis, delivery, preparation)
  - Work plan (samples # and ID, instrumental parameters, sample environment, run time per sample, *etc*)
- Outcome, unicity, impact

Note: give reviewers objective evidence of the soundness and quality of your proposed project

# Pitfalls

- Samples unidentified, or poorly described (composition, number)
- Set-up requirements missing (sample cell, beam size, energy, etc)
- Workflow or work plan not described
- Amount of beamtime not justified
- Higher flux, higher resolution are not good reasons, *e.g.* show a diffraction diagram or prior failures.
- Unclear what structural information will be extracted
- Data processing and analysis tools are not specified
- Avoid generic statements like *“The data will be analyzed to obtain valuable information on new phases”*.
- Place PDF work in context: other methods, modeling (*e.g.* DFT)