The FDS Initiator (FDSi) Guidelines

The FRIB Decay Station (FDS) — an efficient, granular, and modular multi-detector system integrated under a common infrastructure — will be staged, beginning with equipment from existing detector systems and subsequently upgraded, increasing the energy resolution, granularity, and combined efficiencies along the way; this will increase the scientific output and extend the scientific reach towards the drip lines.

The FDS Initiator (FDSi) is the initial stage of the FDS for early FRIB experiments, and is a unique instrument within the FRIB community, built up from detector subsystems owned by multiple experimental groups, who also have the technical expertise for these devices. The guidance set out in this document is meant to provide a framework for proposal preparation and experiment execution which recognizes this complexity fairly and provides a means for FRIB users to conduct world-class decay spectroscopy experiments with the best equipment possible.

The FDSi group consists of instrument owners who have made a device available to the FDSi. The FDS Coordination committee leads the integration of the various FDSi components and manages the associated integration resources. It communicates closely with the FDS UEC on technical decisions that affect FDSi broadly. FDSi community members who own a device they would like to contribute should contact the FDS Coordination committee for joining the FDSi group.

This document represents a joint agreement between the FDSi Coordination committee, FDSi detector owners and the FDS UEC, which represents the wider user community, and it outlines the opportunities, procedures, and conditions for using the FDSi.

Definition of FDSi Equipment Availability

- **Primary Detectors Subsystems –** Prior to each PAC cycle, FDSi Coordination committee together with the FDS UEC and in coordination with the FDSi group, will provide a list of available “primary” detector systems (e.g. gamma-ray detectors, neutron detectors, implantation detectors and TAS) for decay spectroscopy studies, which will be made available, subject to scheduling constraints, to any experiments ultimately approved. The FDSi group will do their best to work with collaborations and other stakeholders to come up with the resources needed to support the use of these devices. Technical points-of-contact for each detector system, and nominal array configurations will also be provided to FRIB for inclusion in the PAC call for proposals and to the user community. The list of equipment owners who contribute to the “primary” detector systems will also be provided through the FDS website to potential PIs (see later requirements in terms of collaboration inclusion).
- **Secondary Detector Subsystems –** A list of “secondary” detector systems, devices for which the potential PIs would need to collaborate and agree directly with the device owners to use, may also be provided along with points-of-contact for each device (e.g. GADGET). It is expected that “secondary” detectors would have been previously integrated within FDSi, but availability of these systems may be resource limited**.**

- Users who wish to incorporate their own device not listed as a “secondary” detector into the broader FDSi system may also propose to do so. However, they should be aware that there may be limited resources from FDSi to support integration.
- Users interested in other configurations or additions not included in a given PAC call should communicate their needs with the FDS UEC prior to a future PAC cycle.

Collaboration Inclusion Requirements

- For proposals for experiments to be performed within the FDSi group framework, PIs are expected to engage with the FDSi community, by joining the FDS Users Group and accepting the collaboration guidelines and rules, including the code of conduct and this document.
- All members of the FDS Users Group can submit a FDSi proposal, regardless of country or affiliation.
- PIs must invite as collaborators the FDSi Coordination committee, designated technical points-of-contact, and the equipment owners for each detector system they plan to use and other participants these experts may suggest. In addition, PIs should take advantage of the technical expertise of the points-of-contact to provide technical review and input as proposals are developed.
- Individuals who contributed significantly to the overall integration effort as determined for each PAC call by the FDSi Coordination committee in consultation with the FDS UEC should be invited to participate in all FDSi experiments if they desire. The contact information for these individuals will be provided through the FDS website to all potential PIs.

Proposal Coordination

- To allow most effective use of the FDSi, PIs should submit a short abstract (one-page limit) to the UEC that communicates the aim of their intended proposal prior to submission, preferably 30 days before a PAC proposal deadline. The UEC will use this information to recommend possible merging and coordination of proposals with goals that can be achieved simultaneously. On all issues surrounding duplicate or overlapping proposals, an understanding should be achieved before final submission.
- **Data Sharing and Publication Authorship:** Primary authorship and data (analysis) sharing are to be negotiated and resolved by the proposal PIs and co-PIs and communicated clearly to all participants, detector points of contact and owners. All people who contributed, for example to proposal development, detector setup, experiment, analysis, or manuscript preparation, are to be included as authors following APS ethics guidelines. FRIB data management and authorship policies must be strictly followed for continued use of the FDSi. The experiment PIs are ultimately responsible in fulfilling any FRIB defined pre-experiment procedures but the FDSi group will make the best effort to assist in this process.
- Any questions or concerns that may arise over the lifetime of an experiment (from proposal preparation through analysis and publication) may be directed to the FDS UEC.

Updates to Guiding Documents, Detectors and Participant Lists

- The terms within this document can be revised at any time with the agreement of the FDSi Coordination committee and the FDS UEC. Any changes must be presented to the community at large in the context of a user community meeting or workshop, and cannot be considered as accepted until the users approve the proposed updates through an online ballot majority vote.
- Prior to each FRIB PAC call, the FDS Coordination committee, together with the FDSi group and FDS UEC will review and update as necessary the detectors to be included as primary and secondary detectors for the FDSi for that PAC call.
- Also prior to each FRIB PAC call, the FDS Coordination committee, together with the FDSi group and FDS UEC will review and update as necessary the lists of equipment owners and FDSi contributors who should be invited to participate in proposed FDSi measurements and ensure that these lists are updated and available on the FDSi website.