**Template for Proposal for DIII-D Frontiers Science Experiment**

*The length of the white paper should not exceed five U.S. letter-sized pages (including figures and references) with a minimum of 11 point main font size.* ***This proposal should be emailed to Anastasia Nycum (******nycum@fusion.gat.com******),*** *who will distribute them to the independent review panel for assessment.*

**1. Proposal Title:**

**2. List of proposers and associated institutions/companies:**

**3. Abstract**

Include a very brief ( <200 words) summary of your proposal’s motivation and anticipated goals.

If your white paper is approved, this abstract will be posted on the facility website.

**4. Background & Scientific Rationale**

*Include information sufficient for someone with a background in plasma science or engineering, but not necessarily an expert in your subfield, to understand your proposal.*

Some questions to consider: What fundamental question or problem will the experiment seek to address? What specific area of plasma physics (solar, magnetospheric, fusion, etc.) does this work inform? What is novel about the proposed experiment? What makes it compelling to do this experiment on DIII-D? What capabilities of the DIII-D tokamak are required for success
(eg. plasma parameters, configurations, diagnosis)?

Proposals will be reviewed based on the **Intellectual Merit** in advancing the frontiers of plasma physics as defined in the 2015 report ‘Plasma: at the frontier of scientific discovery’[[1]](#footnote-1), which spans a broad range of applications such as solar physics, astrophysics, magnetosphere, magnetic confinement, implosion, low temperature, and industrial plasmas. Proposals will also be considered in terms of **Technical Approach** and **Qualification of the team**, as set out below.

**Intellectual Merit** will be judged on:

* To what extent does the proposed work articulate a fundamental intellectual advance or a fundamentally new approach to expanding knowledge, understanding, or a new capability?
* How does the proposed work compare with other efforts in its field, in terms of uniqueness, originality and /or scientific merit?
* What will be the impact on the field?

**Technical Approach** will consider:

* How well organized and developed is the proposed research?
* Is the technical approach feasible with a well thought-out experimental plan?
* If additional resources are requested from the facility, are these reasonable?

**Qualification of the PI and Team** will consider**:**

* How well qualified is the PI and the team?
* Are the necessary skills represented amongst proponents?
* What is the level of technical support needed from the facility team?

Broader impacts may also be considered such as involvement and training of junior scientists (including students & postdocs), impact on diversity, and contributions to the broader DIII-D User Community (e.g. will the project bring new techniques or hardware that could be utilized by others?).

*Proposers should ensure that the goal of the experiment is clear in the proposal and that resources requested (run time, measurements to be made, etc.) are reasonable.*

Applicants who have previously been allocated DIII-D runtime and are seeking new runtime to continue the same project should provide a status report on the results of prior runtime (including any presentations or publications that have resulted from the previous runtime).

**5. Experiment Design**

**5.1 Experimental Setup and Diagnostics**

*Details on machine and plasma parameters, available diagnostics, digitizers, and in-house equipment can be found on the facility website (*[*https://fusion.gat.com/global/diii-d/frontier*](https://fusion.gat.com/global/diii-d/frontier)*). Applicants are encouraged to engage relevant experts from within the DIII-D program to assist in developing proposals and carrying out experiments, and addressing the following questions.*

* What are the required range of plasma parameters (magnetic field, current, density, ion species, electron temperature, heating power, shape, etc.?)
* What diagnostics are needed (magnetic probes, Langmuir probes, particular profile measurements, turbulence, spectroscopic, interferometers, etc.?) Please describe measurements and precision needed, indicating particular desired systems if known.
* Is other equipment or particular conditions needed (e.g., heating and current drive, cryopump, pellets, 3D fields, gas species)
* Is there any new equipment to be purchased or fabricated by the proposers? Do the proposers have the funding to purchase and/or the technical skills required to build the necessary hardware?

**5.2 Experimental Run plan**

Describe how the resources in section 5.1 will be employed to answer the proposed scientific question(s).

How many days of runtime in the appropriate calendar year are required to carry out the proposed plan?

**6. Personnel**

Describe the roles of each proposer and what each will do to execute the goals of the project.

Mention any DIII-D team members these ideas have already been discussed with, or who plan to help.

**7. References**

1. *“Report of the Panel on Frontiers of Plasma Science”at* [*https://science.osti.gov/fes/Community-Resources/Workshop-Reports*](https://science.osti.gov/fes/Community-Resources/Workshop-Reports)

 https://science.osti.gov/-/media/fes/pdf/program-news/Frontiers\_of\_Plasma\_Science\_Final\_Report.pdf?la=en&hash=85B22EBF1CF773FFC969622524D603D755881999 [↑](#footnote-ref-1)