

Guidelines for Submission of a Beam Time Request at TIFPA

**POLICY**

**TYPES OF REQUEST:**

1. Experimental Proposals
2. New Proposal: describes a single project for which no previous beam time has been assigned.
3. Renewal Proposal: describes a single project with previously assigned beam time.

2. Beam Time Request

Proper justification for the amount of beam time requested is REQUIRED FOR ALL PROPOSALS.

***PRIOR TO SUBMISSION:***New users **MUST** (and returning investigators are encouraged to) contact the accelerator facility and radiobiology/laboratory facilities personnel (see Contact list below) to determine availability of beamtime and any laboratory support requirements for the proposed experiments.

**PROPOSAL SUBMISSION AND DEADLINES:**

Proposals MUST be received at TIFPA by 5 PM on or before the date of the submission deadline. If the submission deadline falls on a weekend day or holiday, proposals will be accepted until 5 PM of the workday immediately following the weekend or holiday.

After Proposal submission, some time is necessary in order to proceed with PAC evaluation and implementation of successful applications. A list of the coming deadlines and related beamtime access periods is provided below:

* **1st March** – Access period from July (current year) to March (next year)
* **1st July** – Access period from November (current year) to July (next year)
* **1st November** – Access period from March (current year) to November (next year)

In rare occasions, urgent requests can be considered if appropriately justified. The PAC will review urgent proposals within one month. The eventual implementation of successful proposals will take place within three months.

**TYPES OF PROPOSALS, CATEGORIES OF USERS AND PRIORITIES:**

All proposals are classified by the PAC as follows:

* **Type A (Scientific Collaborations):** access will be charged for beam hours as well as for shipping costs and sample/equipment handling if applicable. Users are requested to acknowledge the support of TIFPA personnel in any scientific output stemmed from the beamtime. All abstracts, presentations and publications using any of the beamtime output must be submitted to the PAC in advance. Users will be asked to contribute to the TIFPA annual report with a short description of the activities performed and the related results.
* **Type B (Industrial or commercial testing):** access will be charged for beam hours as well as for shipping costs and sample/equipment handling if applicable. For information about beam time costs please contact the chair of the PAC. Users will be asked to contribute to the TIFPA annual report with a short description of the activities performed and the related results.

The following types of Proposals and categories of Users are defined:

**CATEGORY 1**: Principal Investigators whose proposal has been approved by the PAC and classified as **type A**.

**CATEGORY 2**: Principal Investigators whose proposal has been approved by the PAC and classified as **type B**.

**CATEGORY 3**: “Parasite” or “piggyback” experiments (*i.e.*, short-term irradiations requiring no significant TIFPA resources as determined by the PAC). A piggy-back experiment receives no beam time or accesses of their own. The ion energy, cave entrances and doses are defined by their host’s experiment(s). The team is expected to work with their host to share lab resources, if applicable. If these conditions are not met, the PI should apply for dedicated beam time separately with the appropriate funding resources. Scheduling Priority: **3**, depending on availability.

**REVIEW PROCEDURE:**

The Program Advisory Committee (PAC), appointed by the CPR of TIFPA, will review proposals. Spokesperson(s) for each proposal may request the opportunity to make an oral presentation to the PAC committee. The PAC will review proposals and provide a recommendation to TIFPA management on each proposal. The evaluation criteria will take into account the following aspects (with the associated relative weights), which the User is recommend to carefully read:

* ***Significance*** (*30%*): Is there a clear, well-grounded and elaborated scientific justification and motivation provided in the proposal? Are the scientific objectives, research questions and hypotheses clearly formulated? Does the proposed study address an important problem or challenge? If the aims of the study are achieved, will this benefit the advancement of scientific knowledge? Will the outcome of the study have an important impact on the concepts, methods, or products that drive this field of research?
* ***Approach*** *(25%):* Are the conceptual framework, design, methods, and analyses adequately developed, well integrated, and appropriate to the aims of the project? Does the present proposal build upon a successful foundation of previous studies? Is the proposed approach likely to yield the desired results? Does the applicant acknowledge risks and provide mitigation?
* ***Innovation*** (*20%*): Does the project employ novel concepts, approaches, or methods? Is the scientific proposal novel? Are the aims original and innovative? Will the project result in a significant advancement of science by challenging existing paradigms or develop new methodologies or technologies?
* ***Feasibility*** (*25%*): Does the scientific team have the appropriate level of experience? Are there sufficient and appropriate personnel dedicated to the project? Is there evidence of the science team’s satisfactory productivity and scientific track record? Has the team demonstrated experience with irradiation facilities? Does the amount of requested hours fits with the experimental plan?

Finally, a score will be assigned to each proposal, according to the following scale:

* Excellent  100 - 91 points
* Very Good  90 - 76 points
* Good  75 - 61 points
* Fair  60 - 51 points
* Inadequate  50 - 0 points

**ABOUT YOUR PROPOSAL:**

1. Full proposals must be submitted **ELECTRONICALLY** to: pac@lists.tifpa.infn.it
2. Proposals must not exceed the specified page limits.
3. Proposals for beam time must be submitted **ON** or **BEFORE** the deadline for each run’s scheduling cycle in which beam time is desired. Proposals received after the deadline will not be considered in the upcoming review cycle, but will be considered as submitted for next subsequent deadline and review cycle.
4. Proposals must include completed and signed copies of the following experimental safety and grant award information forms, as appropriate:

***To be submitted:***

* Form 1: User Proposal Form (Mandatory for all Users)
* Form 2: Safety Form (Mandatory only for users requesting use of any laboratory or cell/tissue culture at TIFPA)
* Form 3: Gamma Ray Irradiation Request Form (Mandatory only for users requesting use of the Gamma Ray facility).

After acceptance, when the experiment has been scheduled, each participant has to submit a Registration Form.

**SUPPORT PROVIDED BY TIFPA:**

All approved experiments will be assigned one or more liaison scientist(s) from TIFPA, who is going to be the primary contact for the Users. Principal investigators are welcome to suggest a specific candidate for this role.

**RIGHT AND RESPONSIBILITY OF TIFPA USERS:**

1. It is recommended for first-time Users to schedule a visit to TIFPA prior their experiment (**Dry Run**). If the entire crew has never performed an irradiation at TIFPA notify it to us well in advance.
2. Plan your arrival in Trento **one day before** and your departure **one day after the exposure**, unless agreed otherwise with your liaison scientist.
3. Plan to have **enough people** to carry out the irradiation.
4. Collaboration between different groups is encouraged. However this does not mean that you can give away “your” beam time to other groups without clearing it first the PAC.

**TRAINING:**

All Users must arrange to complete the training as required by TIFPA safety personnel to release them a dosimeter. **ACCESS TO THE TARGET ROOM IS PERMITTED** **ONLY TO USERS CARRYING A DOSIMETER.**

Prior the beginning of the experimental activities all participants have to follow a briefing about access rules to the target room and safety procedure, at the end of which they will all sign a user agreement. This form is valid for **one calendar year**.

**IN CASE OF BEAM UNAVAILABILITY**

Users should be aware that beam unavailability might happen due to technical issues which are beyond TIFPA responsibility. In this case, a replacement shift will be assigned to Users without extra access costs. Any additional cost related to travel, hotel stay or similar will not be refunded.

**BEAM TIME CALCULATION:**

Take into account the following parameters for calculating the beam time hours:

1. Maximum 5 minutes for an energy switch.
2. 5-10 minutes for intensity adjustments.
3. Access time to the target room depends on the specific irradiation conditions. In any case, activated materials cannot be handled if the dose rate is not below the following limits:
* 50 Sv/h at contact
* 5 Sv/h at 50 cm distance from the target

**MATERIALS:**

All the following materials have to be discussed with TIFPA before submitting a proposal:

1. Radioactive material (do not include irradiated/activated beam line materials).
2. Explosive, flammable, toxic, corrosive material.
3. Any biohazard or chemical hazard.
4. Gas detectors, compressed gases, cryogens.
5. Nano-materials.

Any activated material has to remain at TIFPA until it is released by the radiation safety officer.

**Users are responsible for all non clean waste and cannot dispose of it at TIFPA.**

**BEAM SPECIFICATIONS:**

A list of all energies available at TIPFA is listed below together with the corresponding range. Intermediate energy values can be obtained on request. Energies lower than 70 MeV can be obtained with the use of degraders. FWHM refers to the beam Gaussian profile as measured in air at Isocenter position (i.e. 1.25 m from beam exit window). Beam intensity values reported in the table correspond to 1 nA beam current requested at beam extraction. Any beam extraction current can be requested in the range 1-300 nA. In case lower intensities are needed, beam rate at Isocenter position in the order of 102 Hz can be obtained.

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| **Energy****[MeV]** | **Range****[g cm2]** | **FWHM****[mm]** | **Intensity****[p/s]** |
| 228 | 32.5 | 6.8 | 2.29E+08 |
| 224 | 31.5 | 7.0 | - |
| 220 | 30.5 | 7.2 | 2.05E+08 |
| 216 | 29.5 | 7.2 | - |
| 211 | 28.5 | 7.5 | 1.67E+08 |
| 207 | 27.5 | 7.8 | - |
| 202 | 26.5 | 8.0 | 1.41E+08 |
| 198 | 25.5 | 8.1 | - |
| 193 | 24.5 | 8.3 | - |
| 189 | 23.5 | 8.5 | 1.12E+08 |
| 184 | 22.5 | 8.6 | - |
| 179 | 21.5 | 8.7 | 9.01E+07 |
| 174 | 20.5 | 9.0 | - |
| 169 | 19.5 | 9.2 | 7.42E+07 |
| 164 | 18.5 | 9.4 | - |
| 159 | 17.5 | 9.7 | 5.51E+07 |
| 154 | 16.5 | 10.2 | 4.64E+07 |
| 148 | 15.5 | 10.6 | - |
| 143 | 14.5 | 11.1 | 3.64E+07 |
| 137 | 13.5 | 11.3 | - |
| 131 | 12.5 | 11.8 | 2.68E+07 |
| 125 | 11.5 | 12.3 | - |
| 119 | 10.5 | 12.6 | 2.79E+07 |
| 112 | 9.5 | 13.0 | 2.11E+07 |
| 106 | 8.5 | 13.4 | - |
| 100 | 7.72 | 13.7 | 1.19E+07 |
| 91 | 6.5 | 14.6 | 9.94E+06 |
| 83 | 5.5 | 15.2 | 7.50E+06 |
| 74 | 4.5 | 15.9 | - |
| 70 | 4.1 | 16.2 | 3.83E+06 |

# TIFPA Contact Information

TIFPA is located at Via Sommarive 14, 38123 Povo (TN), Italy.

The Protontherapy Center is located at Via Al Desert 14, 38122 Trento, Italy.

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| **TIFPA beam line information** |
| Dr. Chiara La TessaAddress: TIFPATelephone/fax: +39 0461 282742Email: chiara.latessa@tifpa.infn.it | Dr. Francesco TommasinoAddress: TIFPATelephone/fax: +39 0461 281587Email: francesco.tommasino@tifpa.infn.it |
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| **TIFPA technical support** |
| Dr. Enrico VerroiAddress: TIFPATelephone: +39 0461 283977Email: enrico.verroi@tifpa.infn.it |  |
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| **TIFPA radiation protection and safety** |  |
| Dr. Nicola PaceEmail: nicola.pace@gtstrento.it |  |
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