Trento Institute for Fundamental Physics and Applications

Guidelines for Submission of a Beam Time Request at TIFPA

POLICY

TYPES OF REQUEST:

1. Experimental Proposals
   a. New Proposal: describes a single project for which no previous beam time has been assigned.
   b. Renewal Proposal: describes a single project with previously assigned beam time.
   c. Replacement Proposal: resubmission of a proposal updated to address PAC comments. Replacement proposals replace the original proposal and will be re-rated.

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 2017** – Access period from July 2017 to March 2018
- **1st July 2017** – Access period from November 2017 to July 2018
- **1st November 2017** – Access period from March 2018 to November 2018

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.

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.

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 and for experimental setup, 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 and for experimental setup 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.

ABOUT YOUR PROPOSAL:

a. Full proposals must be submitted **ELECTRONICALLY** to pac@tifpa.infn.it
b. Proposals must not exceed the specified page limits.
c. 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.
d. 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: Registration Form (Mandatory for all Users)
- Form 3: Safety Form (Mandatory only for users requesting use of any laboratory or cell/tissue culture at TIFPA)
- Form 4: Gamma Ray Irradiation Request Form (Mandatory only for users requesting use of the Gamma Ray facility).

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:

a. 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.
b. Plan your arrival in Trento **one day before** and your departure **one day after the exposure**, unless agreed otherwise with your liaison scientist.
c. Plan to have **enough people** to carry out the irradiation.
d. 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**.

BEAM TIME CALCULATION:

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

a. Maximum 5 minutes for an energy switch.
b. 5-10 minutes for intensity adjustments.
c. 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 μSv/h at contact
    - 5 μSv/h at 50 cm distance from the target

MATERIALS:

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

a. Radioactive material (do not include irradiated/activated beam line materials).
b. Explosive, flammable, toxic, corrosive material.
c. Any biohazard or chemical hazard.
d. Gas detectors, compressed gases, cryogens.
e. 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 10^2 Hz can be obtained.

Energy [MeV]	**Range [g cm^2]**	**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.

TIFPA beam line information

Dr. Chiara La Tessa
Address: TIFPA
Telephone/fax: +39 0461 282742
Email: chiara.latessa@tifpa.infn.it

Dr. Francesco Tommasino
Address: TIFPA
Telephone/fax: +39 0461 281587
Email: francesco.tommasino@tifpa.infn.it

TIFPA radiobiology and cell culture support

Dr. Walter Tinganelli
Address: TIFPA
Telephone: +39 0461 281684
Email: walter.tinganelli@tifpa.infn.it

TIFPA radiation protection and safety

Dr. Aldo Valentini
Address: APSS
Telephone/fax: +39 ??
Email: aldo.valntini@apss.tn.it

Dr. Marta Dalla Vecchia
Address: INFN Padova
Telephone/fax: +39 049 8277292
Email: marta.dallavecchia@pd.infn.it