Request for Beam Time at the PS & SPS in 2016

Please fill out this form by editing its electronic version (http://sps-schedule.web.cern.ch/sps-schedule/2016/beam_request_form_2016.docx)
on your computer using *Word* or *OpenOffice*, save the file as EXPERIMENT_NAME-beam_request_2016.docx, and send it to the PS/SPS physics coordinator: Henric Wilkens (sps.coordinator@cern.ch) latest by November 22nd 2015.

For questions on the beam test infrastructure, the request procedure or other help you might need to fill the request forms, please contact the liaison physicists for the beam lines Ilias Efthymiopoulos, Adrian Fabich, Lau Gatignon & Edda Gschwendtner (sba-physicists@cern.ch) or the PS/SPS physics coordinator (sps.coordinator@cern.ch).

For points 2. to 5. further information can be found at the end of this document.

The 2016 CERN injector schedule can be found at Injector_Schedule_2016.pdf.

Filled in by:	**Date:**
Francesco Terranova	November 16, 2015

1. General

Name of the experiment or test beam activity (e.g. NA60, COMPASS, ALICE-PHOS, RD42):

SCENTT

Purpose of the experiment or test beam activity (e.g. physics, prototype tests, detector or electronics R&D)
Give a brief description what the experimental program / what the aim of your test beam program will be.

The SCENTT project is aimed at developing an ultra-compact light readout system for shashlik (scint.+absorber+WLS fibers) calorimeters. The readout is based on matrices of SiPM that are directly coupled to the fibers without fiber bundling and the system is embedded in the bulk of the calorimeter. Potential applications are broad because this readout system solves the classical problem of longitudinal segmentation of shashlik calorimeters. The goal of the testbeam is to demonstrate the e/pi separation capability of the prototype and study the basic calorimeter performance (energy resolution in the 1-5 GeV, pile-up, recovery time etc.)

Responsible person (spokesperson)

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Person responsible during the run (if different of above, usually run coordinator, test beam coordinator)

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other info or comment:

Contact person at CERN (if different from responsible person)
If the responsible person is usually not at CERN, please give the name of a contact person who is usually resident at CERN, if possible.

Name:	e-mail:
Home Institute:	
Address:	
Phone:	Fax:
other info or comment:	

Requested beam time (e.g. 1 week, 1 month)

3 days (installation) + 10 days (setting up and data taking)

Requested beam time at the PS East Hall of more than 14 days per year and at the SPS of more than 7 days per year needs to be recommended and approved by the relevant CERN scientific committee (e.g. SPSC, LHCC and Research Board).

If your request exceeds 14 days per year at the PS or 7 days per year at the SPS:
has your beam request already been submitted/recommended/approved to/by a committee? Please refer to committee minutes, if possible (SPS Committee, LHC Committee).

For a beam test that is not related to any CERN experiment/project etc.
Is your test related to an approved experiment or R&D-project of another laboratory in a CERN member/observer/non-member state, or is it an individual test? Is it a CERN recognized experiment, (provide RE number)? What are your requirements in terms of staff support / material support from CERN?

SCENTT is an official R&D project approved by the Italian Institute for Nuclear Research (INFN) in September 2015. The duration of the R&D is 2 years: 2016 is devoted to calorimetry with a compact light readout system while integration with photon veto will be performed in 2017. Several members of the SCENTT collaboration have experience in detector tests at T9: we hence do not request special services from CERN exept for the usual staff support to beam users in the setting up phase of the test.

2. Beam Requirements

2.1 PS (East Hall)

Particle type, momentum, polarity, intensity, beam size etc. (for details see http://sba.web.cern.ch/sba/BeamsAndAreas/East/East.htm)

East hall beam characteristics:
- particle type: electrons (lower momenta), muons, hadrons, both polarities.
- intensity: typically $10^3 - 10^4$.

particle type	☒ electrons	☒ muons	☒ hadrons
Polarity	☐ positive	☐ negative	☒ polarity does not matter
momentum: 1-5 GeV			
intensity: up to 10^4 part/spill			
Beam size: ~ cm^2			
Other requirements or comments: Cherenkov's for particle ID are needed to test the e/pi separation capability of the calorimeter at low energy.			

Preferred beam line
If you would like to use a preferred beam line, please indicate beam line and reason.

	beam line	Momentum (min. - max.) / GeV/c	your comment

☐	T8	primary particles, reserved for EA-Irrad	
☒	T9	1 - 15	This is our preferred beamline in terms of energy range, space in the experimental area and possibility to use cherenkov detectors for e/pi separation at low energy
☐	T10	1 - 7	
☐	T11	1 - 3.5, reserved for CLOUD experiment	

Special requests, other requirements or comments:

2.2 SPS (North Area)

Particle type, momentum, polarity, intensity, beam size etc. (for details see http://sba.web.cern.ch/sba/Documentations/How2controlNAbeams.htm)
North area beam characteristics:
- particle type: electrons (lower momenta), muons, hadrons, both polarities.
- momentum and intensity: 20 – 250 GeV/c, typically 10^4 particles per spill (π^+).

particle type	☐ electrons	☐ muons	☐ hadrons
Polarity	☐ positive	☐ negative	☐ polarity does not matter
momentum:			
intensity:			
beam size:			
other requirements or comments:			

Preferred beam line If you would like to use a preferred beam line, please indicate beam line and reason. **In addition, indicate if you need lower or higher momenta (20 GeV/c or below and higher than 250 GeV/c), higher intensities or primary protons/ions!**

	beam line	your comment
☐	H2	
☐	H4	
☐	H6	
☐	H8	
☐	M2	
☐	K12	
☐	P41/61	

Special requests, other requirements or comments:

3. Time constraints

Preferred and/or excluded time of the year (e.g. early July/August, NOT in July, NOT before June)

Beam time should be allocated after October 3rd to allow for the completion of the detector assembly

Which problems you will face if we have to reschedule your beamtime request to the 2017 run. (e.g We will not be allowed to install our detector in, we will not be able to launch production of ….)

The outcome of the test is needed to launch the production of the photon veto, which is scheduled at the beginning of 2017.

4. Equipment and installation

4.1 Type, size and weight of detector (e.g. Silicon detector, RPCs, calorimeters)

Type: calorimeter
Size: 1500 mm (length) x 500 mm (height) x 500 mm (width) [including the movable platform and the front-end digitizers]
Weight: 120 kg
Additional comments: Silicon detectors (provided and operated by us) are positioned in front of the calorimeter for particle tracking (1 m of additional space in front of the calorimeter)

4.2 Space and electrical power requirements (e.g. length along beam line, width, power consumption)

Required floor space in exptl. area: movable platform for the calorimeter and crate rack for the DAQ system + silicon detectors (~3m length x 1 m width)
Beam height above floor: ~1 m
Max. cable length: DAQ is placed in the proximity of the calorimeter so no signal cables run to control room exept for the network cable and spill signal.
Space in control room: 3-6 people
Power requirements: <10 kW
Cooling required: no
Additional comments:

4.3 Additional installations (e.g. Magnets, Platforms, Cerenkovs for particle ID)

Magnet:
Cryogenics:
Platforms: movable platform for the calorimeter
Beam instrumentation: threshold cherenkov counters
Additional requirements / comments:

4.4 Time needed for installation/de-installation

Installation: 1.5 days
De-installation: 1
Additional comments:

5. Safety Hazards

5.1 Flammable / poisonous gases (e.g. Ar/CH4 90/10)
Please check CERN safety rules PH FGSO Guidelines and contact the PH-FGSO (PH division Flammable Gas Safety Officer) if you want to use flammable mixtures or if in doubt.

5.2 Pressure / vacuum / cryogenics (e.g. gas detectors under pressure, LAr detectors)
Such equipment might need additional technical safety inspections or tests. Please check CERN safety rules and contact the HSE Unit.

5.3 Laser (e.g. UV-lasers for calibration purposes, N2-, Nd:YAG-lasers)
Please check CERN safety rules and contact the HSE Unit if you want to use a laser other than a laser pointer.

5.4 Irradiated materials and sources (e.g. detectors or any materials that have been irradiated)
Please check CERN safety rules and contact the HSE RP Group if you intend to make an irradiation of material or want to use any irradiated and activated materials.

6. Additional comments from your side

More comments / questions:

After your beam request has been submitted, you may be asked by the SPS/PS Coordinator to supply more information if necessary.

Additional explanations to points 2. – 5.

2. Beam Requirements

Particle type, momentum, polarity, intensity, beam size (e.g. muons, electrons, hadrons, 10^4 particles per spill) and **Preferred beam line** (e.g. T9, T10, T11 at the PS or H2, H4, H6, H8 at the SPS)
Information on the characteristics of the various beam lines can be found on the web (http://sba.web.cern.ch/sba/). Some beam lines are more suited to certain particle types and energies than others, e.g. the H4 beam is the best beam line for high energy electrons (up to about 300 GeV/c). If you would like to use a preferred beam line, please indicate.
A variety of particle types, intensities and particle densities from secondary or tertiary beams is available. As neighbored beam lines might share secondary beams from the same target, there are correlations between those beam lines. At the PS East Hall, T9/T10/T11 are using the same (North) target. At the SPS, H2/H4 and H6/H8/NA62 are making use of beams from the same target, respectively. Only users whose beam requirements are compatible are able to run in parallel in those beam lines. Thus, please give as much information as possible here, e.g. if you need hadrons (pions) or electron enriched beam. Please also specify if you need a particular polarity (e.g. negative pions only) or if the polarity doesn't matter. The choice of polarity can have a big impact on the scheduling.

3. Time constraints

Preferred and/or excluded time of the year (e.g. early, late, July/August, NOT in July, NOT before June)
Please indicate the preferred running period. Please also give your excluded running periods if any, e.g. NOT in July due to conferences or NOT before June because your detector might not be ready. This information helps a lot to solve conflicts if the schedule becomes tight.

4. Equipment and installation

4.1 Type, size and weight of detector etc. (e.g. Silicon detector, RPCs, calorimeters)
Please indicate (if possible), amount of radiation/interaction length. If you have a "transparent" detector (e.g. tracking detector), other parasitic users further downstream may be able to use the beam as well. This usually is more difficult if your detector is a calorimeter where only muons get through.

4.2 Space and electrical power requirements (e.g. length along beam line, width, power consumption)
Space along the beam line could be limited by additional Cerenkovs, mobile beam instrumentation or magnets that you might not find on drawings. If your electronics has large power consumption, please indicate the approximate power needed (kW).

4.3 Additional installations (e.g. Magnets, Platforms, Cerenkovs for particle ID)
If you need additional installations, e.g. magnets etc. please bare in mind that they need cooling water, cables and power supplies. Although a magnet apparently looks installed in a beam area, it might not be operational as e.g. cables or power supplies might be in use elsewhere. A limited number of Cerenkov detectors for particle ID are available. Please indicate early enough if you intend to use them.

4.4 Time needed for installation/de-installation
*The allocated time period includes the time needed for installation/de-installation. It is assumed that you remove your equipment completely from the beam area and the electronic huts **before** your time period has been finished and the hand-over to the next user takes place. Please contact the SPS/PS Coordinator if you want to keep equipment in the beam area after your time period is finished.*

5. Safety Hazards

Because of its international status and because some of its activities are unique in Europe, CERN has its own specific safety regulations. Please make yourself familiar with the safety regulations at CERN, HSE Unit Web pages.

Be aware that there exists an obligatory form on ***Initial safety information on experiments at CERN*** ***latest ISIEC****. The form needs to be filled by all new experiments, new test beam users or in case of major modifications of existing equipment and sent to the PH Division Safety Officer DSO & PS/SPS coordinator: mailto:DSO-PH@cern.ch,Sps.Coordinator@cern.ch. For experiments that are scheduled for a period more than 3 weeks, safety information will be requested in the "Safety File" framework.*

5.1 **Flammable / poisonous gases** (e.g. Ar/CH4 90/10)
If you need to use any gases, please indicate the gases and give their mixture even if you believe that the mixture is non-flammable. CERN rules on flammability are in general stricter and gases might be considered flammable at CERN but non-flammable elsewhere. Please consult the PH FGSO web pages and contact the PH-FGSO (PH division Flammable Gas Safety Officer) if you want to use flammable mixtures or if in doubt.

5.2 Pressure / vacuum / cryogenics (e.g. gas detectors under pressure, LAr detectors)
Such equipment might need additional technical safety inspections or tests, please contact mailto:safety.info@cern.ch.

5.3 Laser (e.g. UV-lasers for calibration purposes, N2-, Nd:YAG-lasers)
Any lasers and in particular UV-lasers require special protection measures depending on their energy or power. These could be protecting tubes or special glasses for people working with them. Please contact the PH Laser Safety Officer (LSO) if you want to use a laser other than a laser pointer, and fill the ISI form (https://edms.cern.ch/document/816962/LAST_RELEASED).

5.4 Irradiated materials and sources (e.g. detectors or any materials that have been irradiated)
If you intend to make an irradiation of material, first check the URLs below and contact the relevant facility coordinators:

www.cern.ch/irradiation for proton irradiations at the PS East Area IRRAD facility
www.cern.ch/charm for mixed-field irradiations at the PS East Area CHARM facility
www.cern.ch/gif-irrad for gamma irradiations at the SPS North Area GIF facility

In general, irradiations of material with hadrons produce residual radioactivity. Depending on the expected activation levels, an irradiation permit (Radiation Protection Procedure - PRP 17) and/or a detailed work and dose planning might be required to avoid unnecessary high personal doses (see above URLs for details). To handle/use any irradiated and activated materials, the Radiation Protection group DGS-RP (https://espace.cern.ch/hse-unit/en/hse-rp/Pages/default.aspx) should be contacted well in advance. Use of strong sources or radioactive gases, e.g. Kr83 for calibration purposes also might require additional safety measures.