WP4 Measurement campaigns

M. Magistris et al.

Outline

- Several applications for beam time have been submitted: CNAO (Pavia, I), INFN-LNS (Catania, I), INFN-LNL (Legnaro, I)
- There is the opportunity to ask for beam time at HIT (Heidelberg, D) and HIMAC (Japan)
- Every ESR, Institute, work package, detector is expected to be involved in at least one measurement campaign for instrument intercomparison.
- There are ESRs that are not yet involved in one of these campaigns. Today we will discuss their measurement needs.

CNAO (Pavia, I)
Beam request to ULICE

- Our plan is to test our detectors under the same beam conditions in the same facility. The facility at CNAO offers 400 MeV/u C and 250 MeV protons.
- A beam request was made in February 2013 to ULICE (Union of Light Centres in Europe), which offers beam time in CNAO and in HIT (Heidelberg)
- We requested 6 visits x 2 shifts (96 hours) over 2 years (April 2013 - 2015)

CNAO (Pavia, I)
Present situation

- We have not received any official answer, but informal discussions point to the fact that our beam request was accepted, and 76 hours total were allocated (out of 96 requested)
  - 30 hours will probably be in HIT (Heidelberg), 35 hours in CNAO, 11 hours not defined yet
  - HIT: night shifts of 6 hours, ideally in the first trimester 2014
- CNAO: Beam time from Friday 22h00 to Sunday 22h00 in 8-hour shifts

CNAO (Pavia, I)
Points to be discussed

- Do we want to insist on having as much beam time as possible at CNAO, in order to test our detectors under the same conditions?
- Do we want to use the offer of beam time at HIT?
- How are we going to allocate our shifts internally and organize them?

INFN-LNL (Legnaro, I)

- Our plan is to make experiments on microdosimetry with Si and GEMPIX detectors. LNL offers a facility with 5 MeV 1H on Li target (>100 nA) and 5 MeV 2H+ on Be target (>300 nA)
- We made a beam request in June 2013 for 4 shifts, which were granted:
  - First shift: 9-10 December
  - Second shift: 16-17 January (possibly 3-4 February)

INFN-LNL (Legnaro, I) Points to be discussed

- Can we organize a visit to LNL before our December shift, in order to get ready and optimize our use of beam time?
- Shall we ask to postpone our second shift (16-17 January) by two weeks (3-4 February)?

INFN-LNS (Catania, I)

- Our plan is to perform experiments on beam monitoring, passive measurements and microdosimetry.
- We made a beam request in march 2013 for C-12, 62 MeV/amu, 10E8 s-1and protons, 80 MeV, 10E10 s-1. 12 shifts total
- We were granted 8 shifts (out of 12 requested). There will be no beam available before April 2014.

INFN-LNS (Catania, I)
Points to be discussed

- We will allocate the shifts and organize our measurements as soon as we have the final time schedule.

HIMAC (Japan)

- We can decide to ask for beam time at the HIMAC facility.
- The deadline for beam request is the 13 November.
- Beam is available at night (21h00 - 7h00) and on Saturdays.
- Ion beams (He to Fe, 100 to 800 MeV/u,

HIMAC (Japan)
Points to be discussed

- Do we want to apply for beam time, and who is interested in participating?

Spare slides

INFN-LNS (Catania, I)
Details of beam request

- Requested: C-12, 62 MeV/amu, 10E8 s-1and protons, 80 MeV, 10E10 s-1. 12 shifts total
- Beam monitoring (F. Murtas et al.)
- Passive measurements (M. Caresana et al.)
- Microdosimetry (S. Agosteo, A. Rozenfeld, F. Murtas et al)
- Secondary dose distributions in and around phantom to patient (S. George et al)

CNAO (Pavia, I)
In-beam measurements

- Beam monitoring (F. Murtas, et al.). GEM, TPC, GEM-PIX
- Homogeneity scan (F. Murtas, et al.). GEM
- Calibration of Timepix detectors (Z. Vykydal, et al.), Timepix

CNAO (Pavia, I)
In-phantom measurements

- Secondary dose to patients (S. George, et al.). Medipix
- Microdosimetry (S. Agosteo, A. Fazzi, A. Rozenfeld, et al.). Si telescope microdosimeters, SOI, 3D sensitive vol.
- Passive measurements (M. Caresana, A. Parravicini, et al.). CR-39, stacked Medipix

CNAO (Pavia, I)
Out-of-phantom measurements

- Passive dosimeters (S. George, et al.). CR-39, Medipix
- Vertex (S. George). Medipix
- Calibration of space flight medipix hardware (L. Pinsky). Various detectors
- Active measurements (M. Caresana, et al.). LUPIN

HIMAC (Japan)
Beam characteristics

- Ion Energy (MeV/u) Intensity

							pps (particles / second)
He	100180	230	- -	- -	-		<1.2 x 10^10
C	100180	230	290	350	400	430 -	<1.8 x 10^9
N	100180	230	290	350	400	430 -	<1.5 x 10^9
O	100180	230	290	350	400	430 -	<1.1 x 10^9
Ne	100180	230	290	350	400	600 -	<7.8 x 10^8
Si	100180	230	290	350	400	600	800 <4.0 x 10^8
Ar	- - -		290	-	400	650 -	<2.4 x 10^8
Fe	- - - - -				400	500 -	<2.5 x 10^8