ELIMED

PLASMAMED

GAP Cirrone

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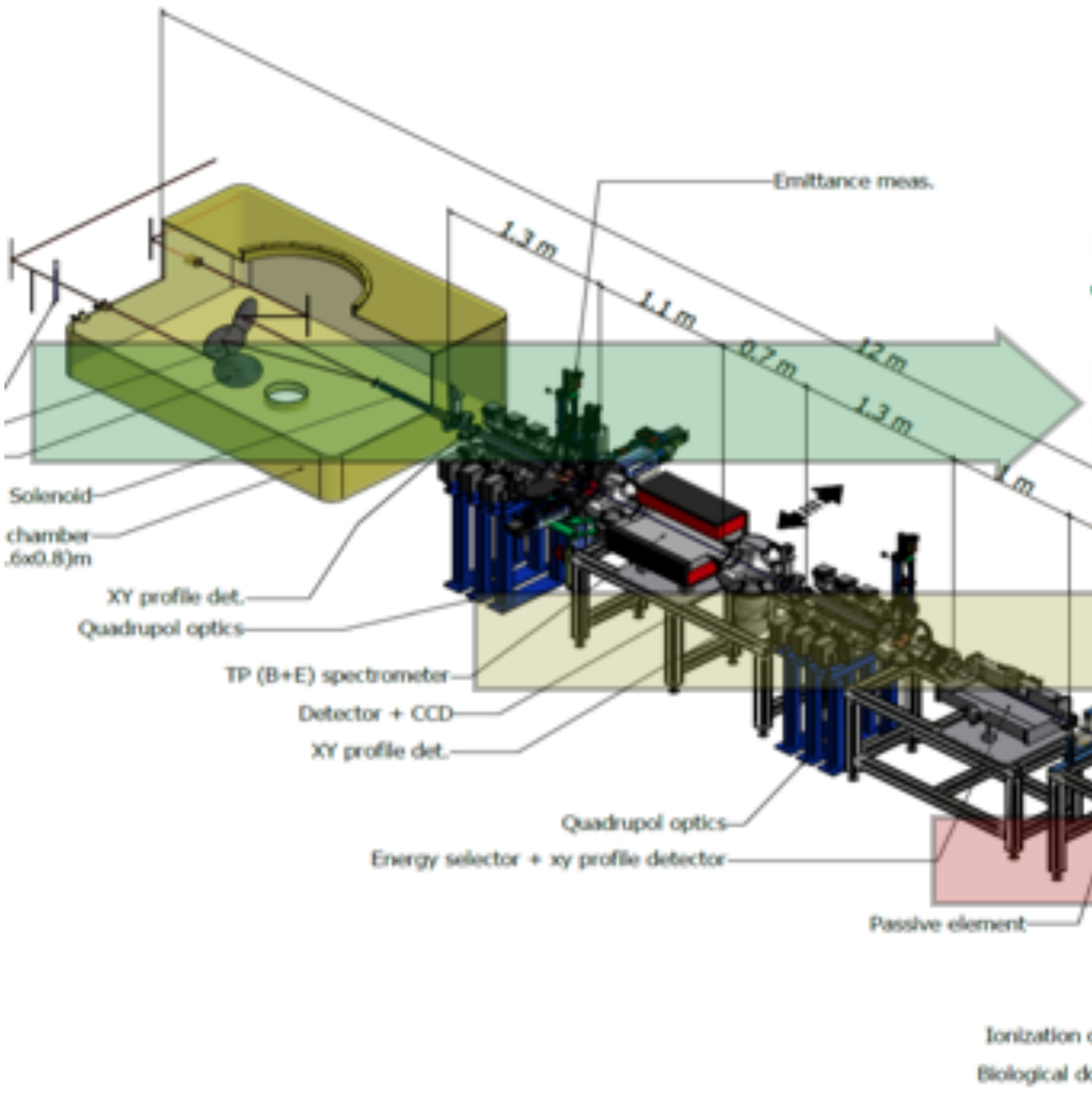
The Working Groups



Resp. D. Giove (INFN-Mi)

Target, simulation and beam handling

Milano, Bologna, LNL, LNS, Messina

Resp. L. Labate (INFN-Pi)

Diagnostic

LNS, Pisa, Lecce, Messina, Roma1

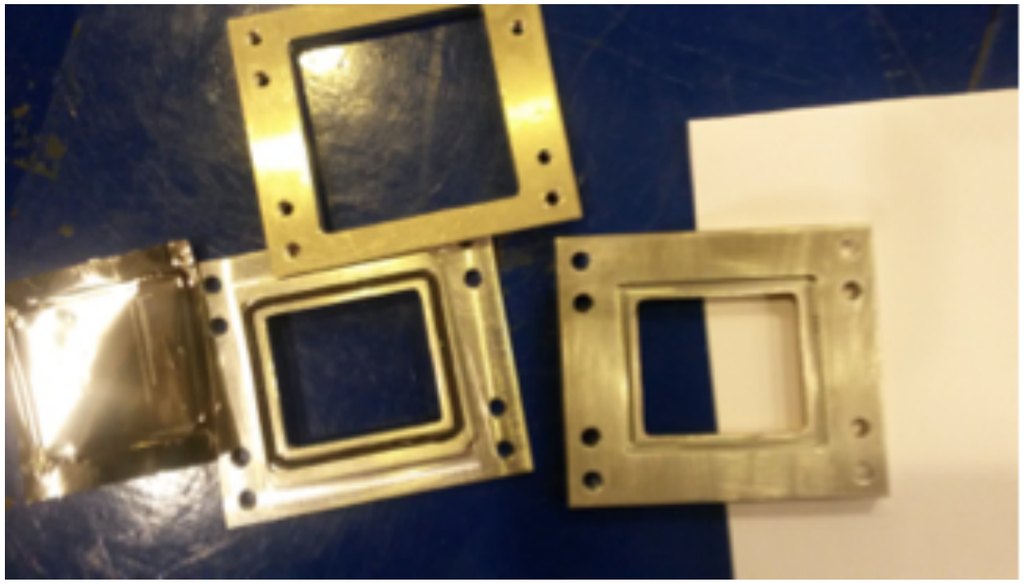
Resp. F. Romano(LNS) & L. Manti(INFN-Na)

Dosimetry and radiobiology

LNS, Napoli, Milano, Bologna

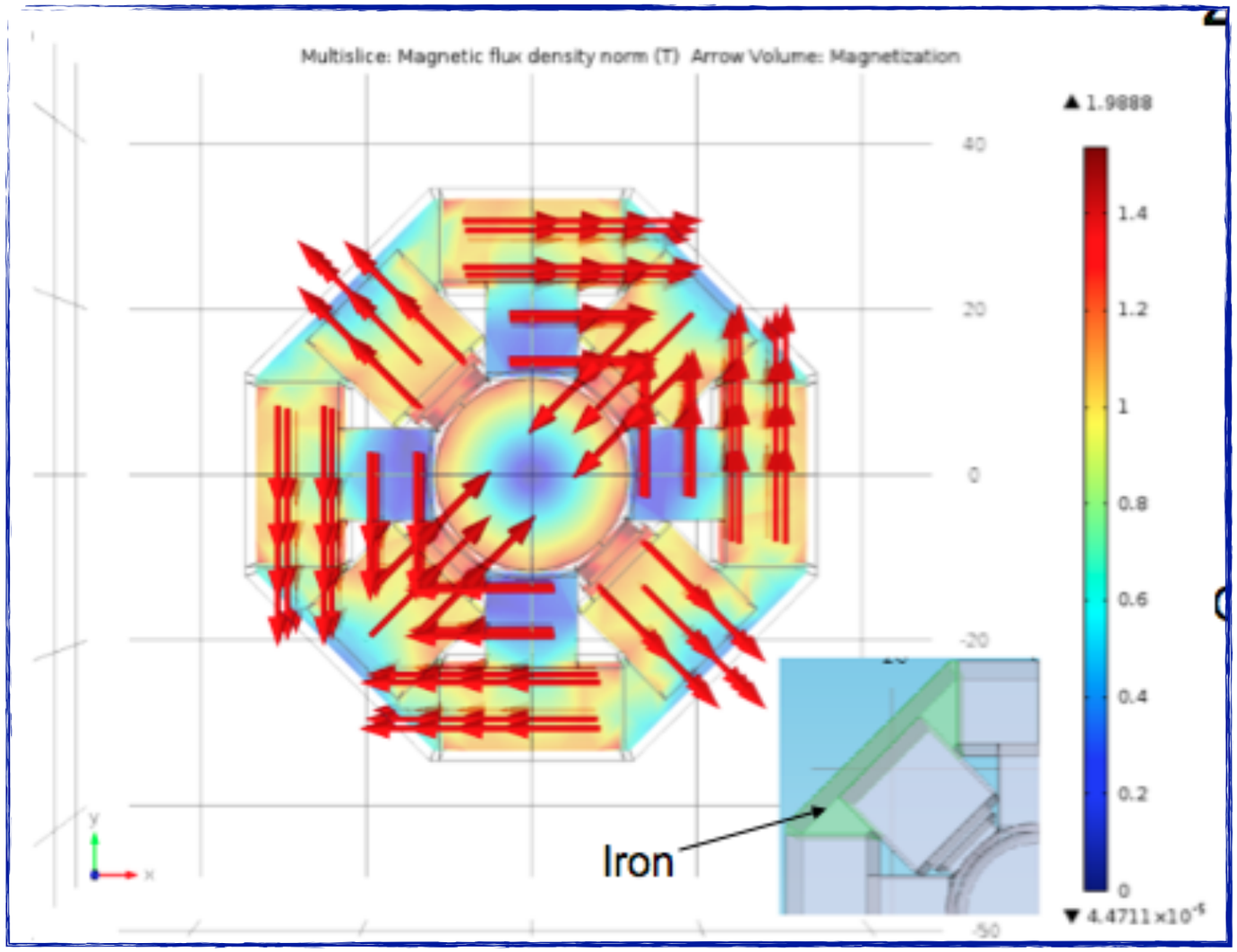
Milestones and activity WP1 - 2014

- Targets development, holders and first experimental tests
  - Development of different targets
    - Structured (conical and spherical shaped)
    - Thin foils (from nm to um) of various materials and foaf
    - Politecnico di Milano, RAL, LASA, LNS, Messina
  - Generic holder for different types of targets

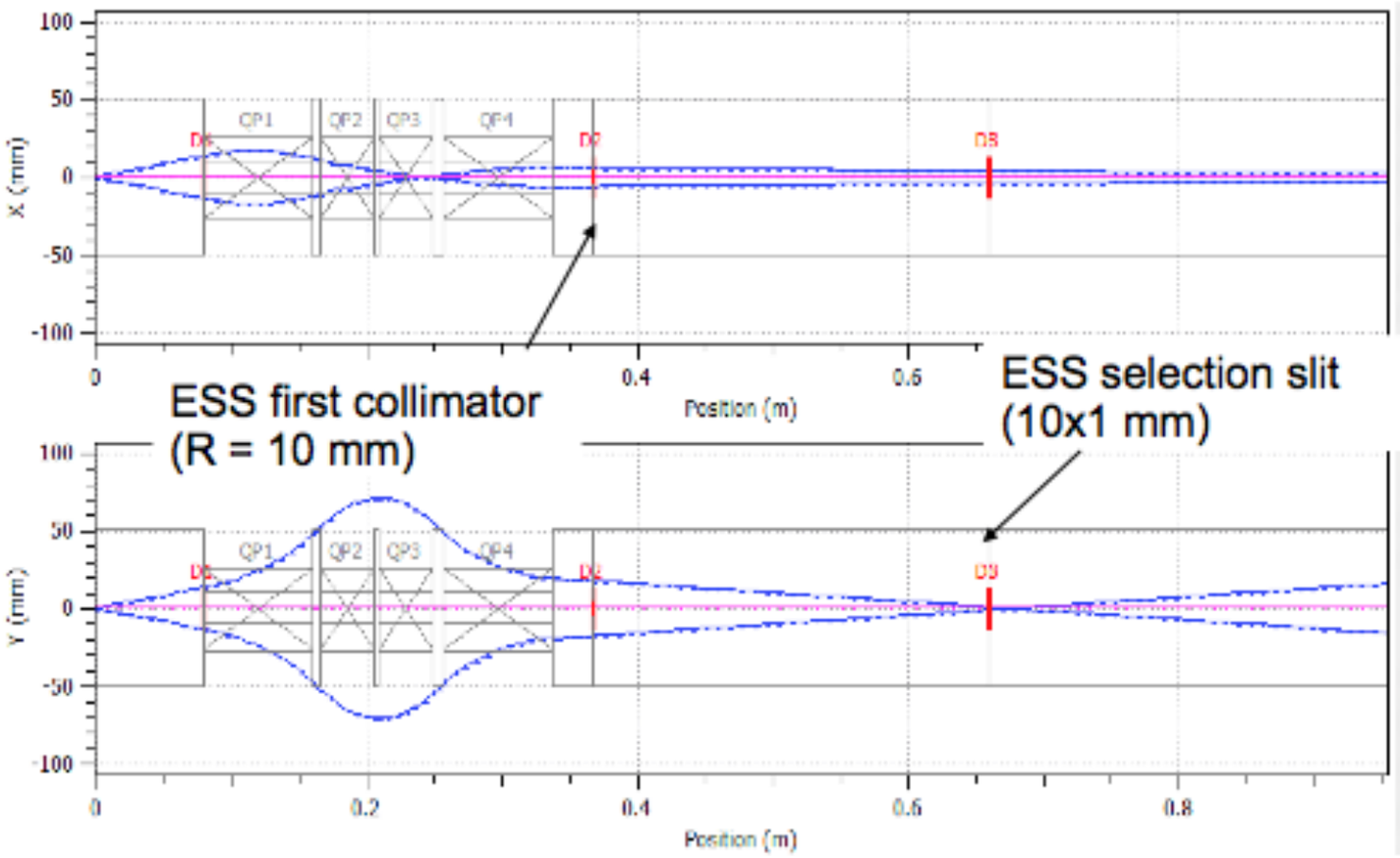


Milestones and activity WP1 - 2014

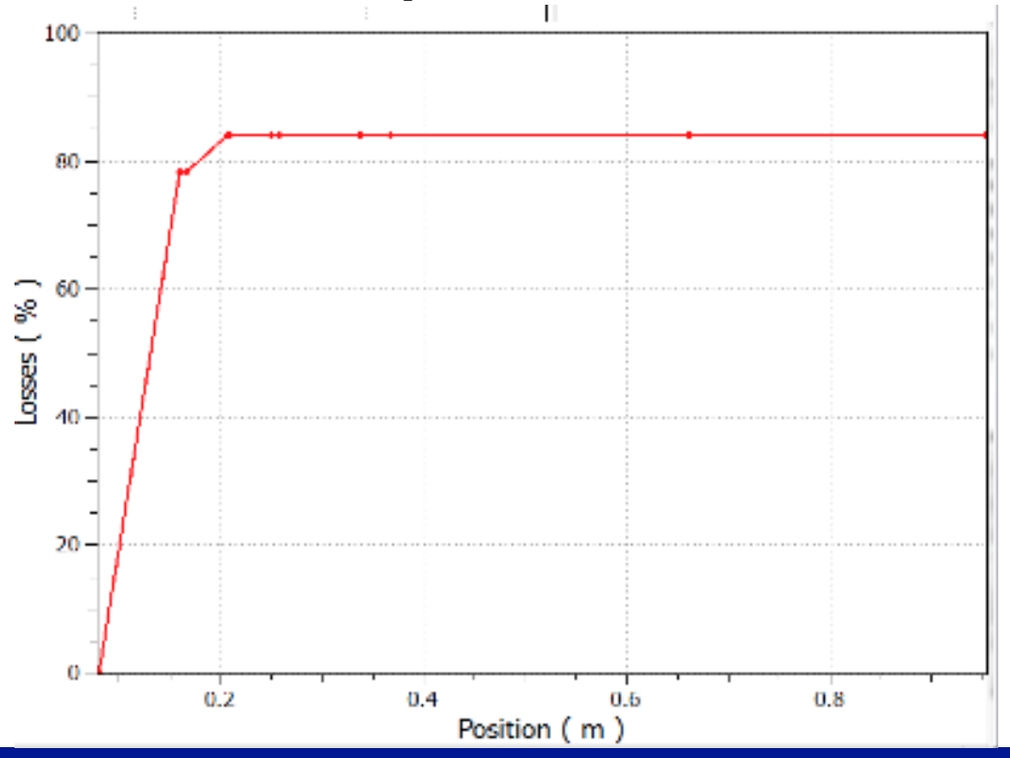
- System of 4 quadrupoles (permanent magnets)
- ELIMED beam line approach
  - Beam from target
  - Collecting device: quadrupoles based
  - Selecting device: energy selector (2013 activity)



Quadrupole - Energy selector matching

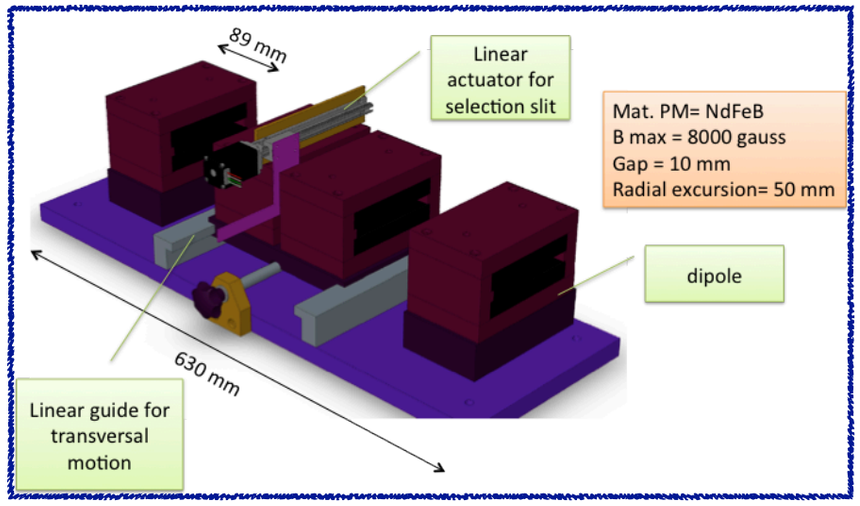


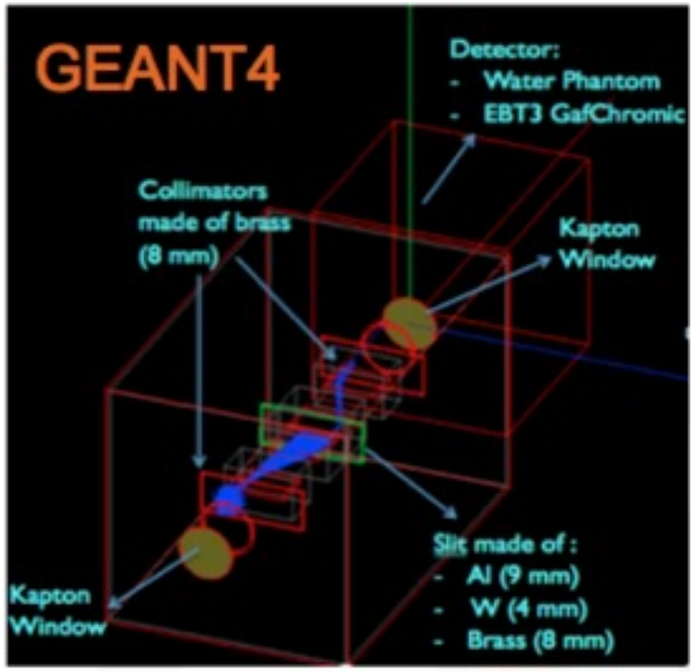
- Case of 5 MeV proton beam
- Total beam losses 95%
  - 80 % in PMQs
  - 10% in ESS

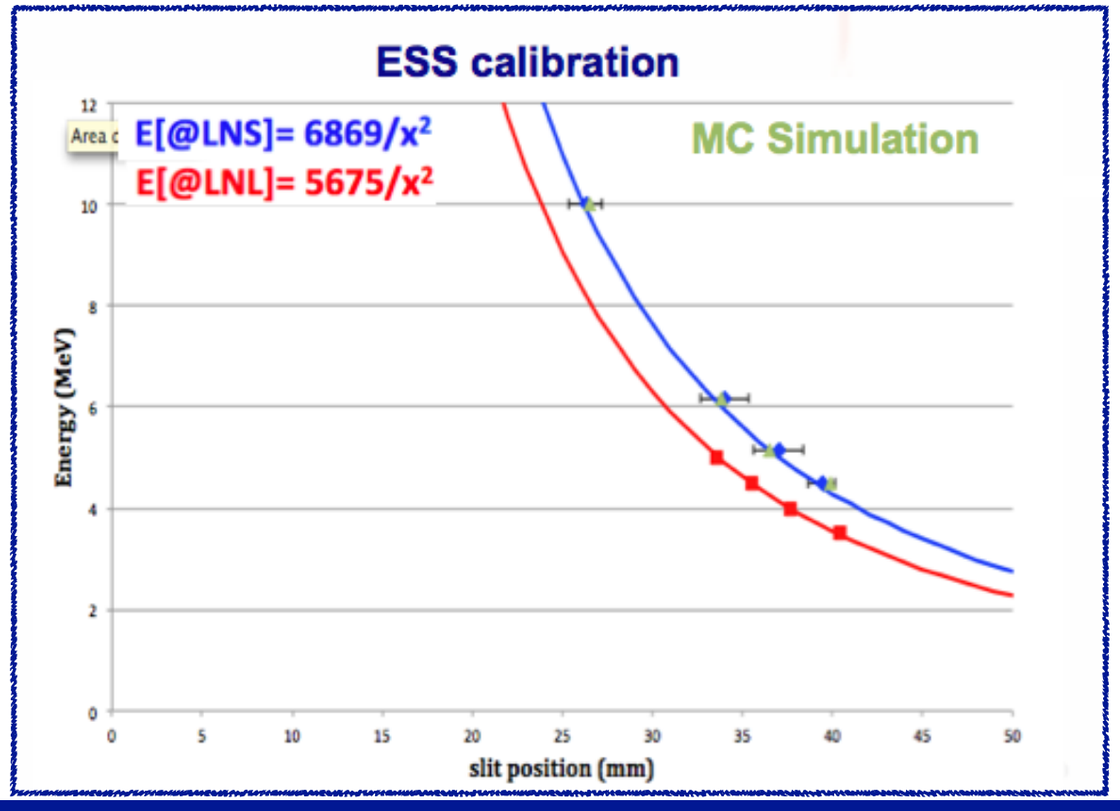


Milestones and activity WP1 - 2014

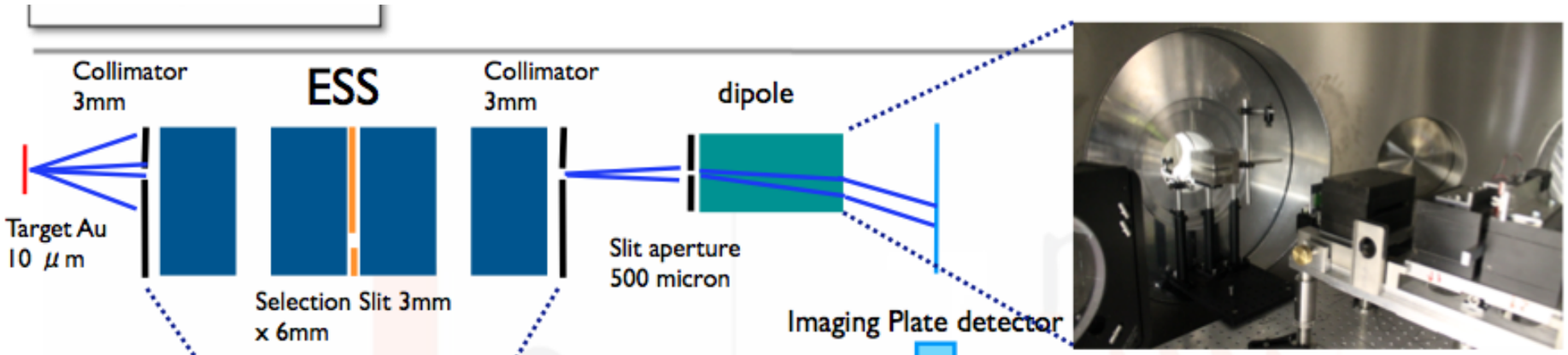
- The Energy selector:
  - Monte Carlo validations
  - Calibration campaign at LNS and LNL
  - First test on laser-driven beam at the TARANIS facility (UK)

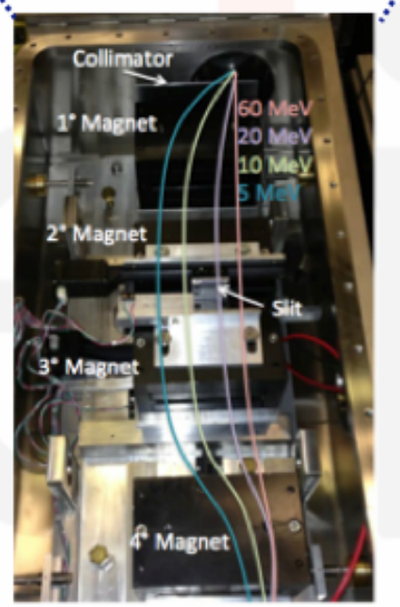


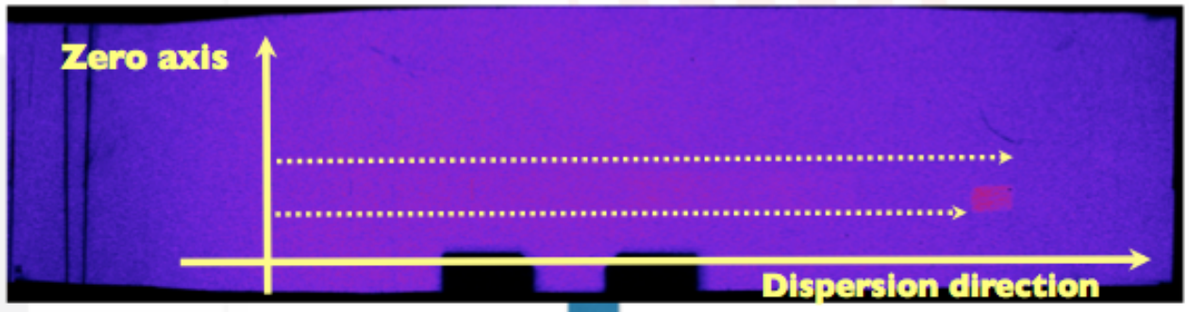


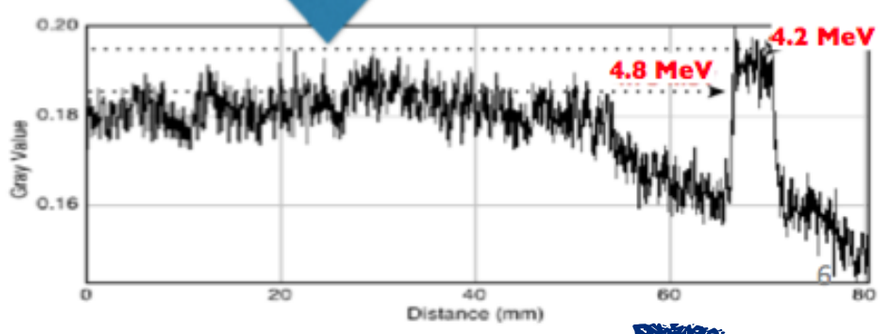


Milestones and activity WP1 - 2014







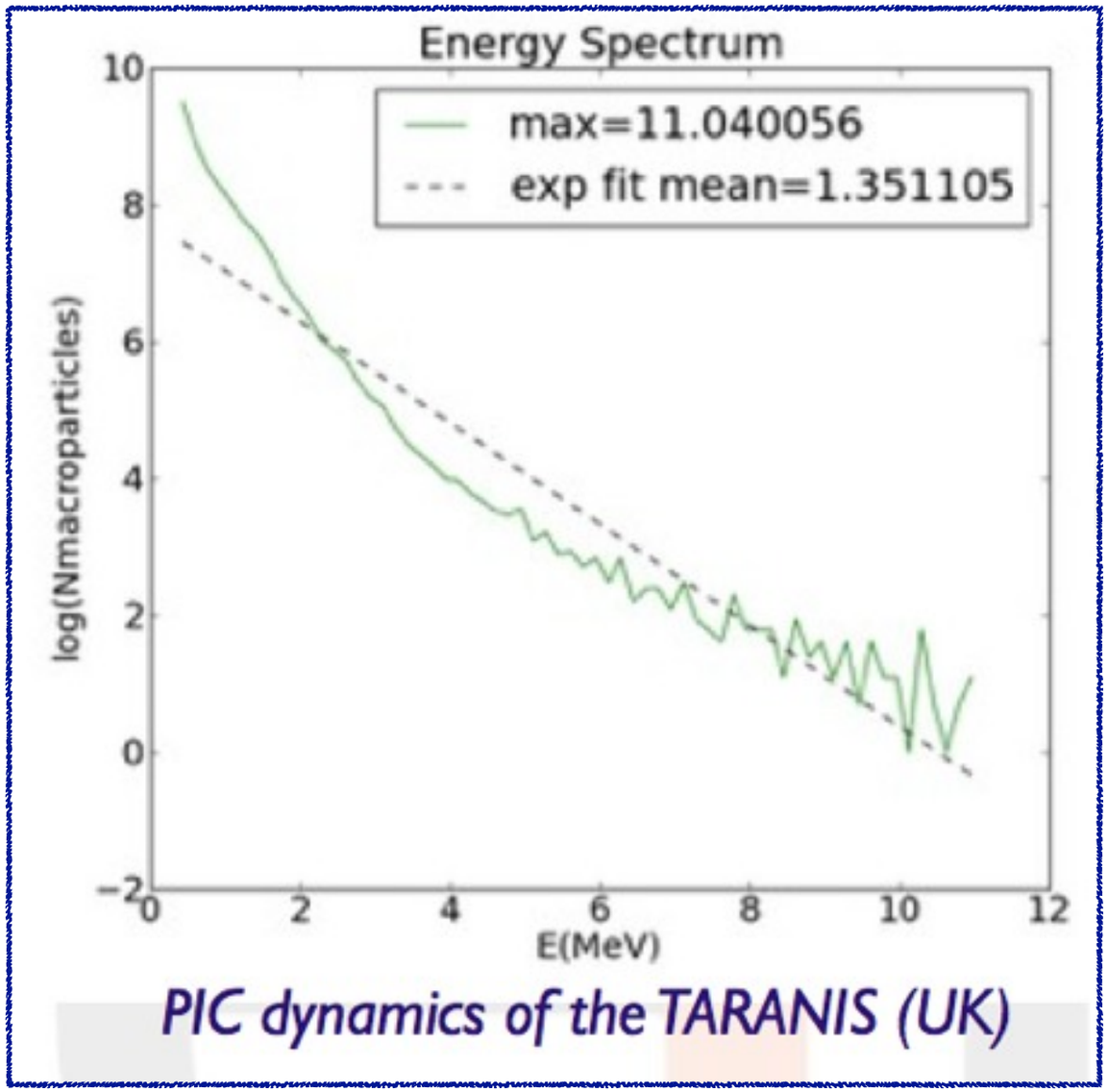


Energy selector

Image plate detector and corresponding spectra

Milestones and activity WP1 - 2014

- Selected laser-driven beams: Energy
  - 4.5 ± 0.3 MeV
  - 7.4 ± 0.6 MeV
- Selected laser-driven beams: Fluence
  - 10^6 /cm2



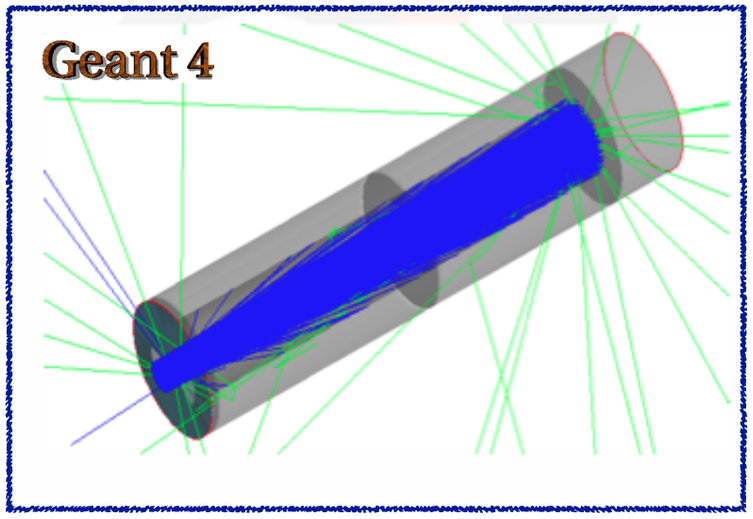
Milestones and activity WP2 - 2014

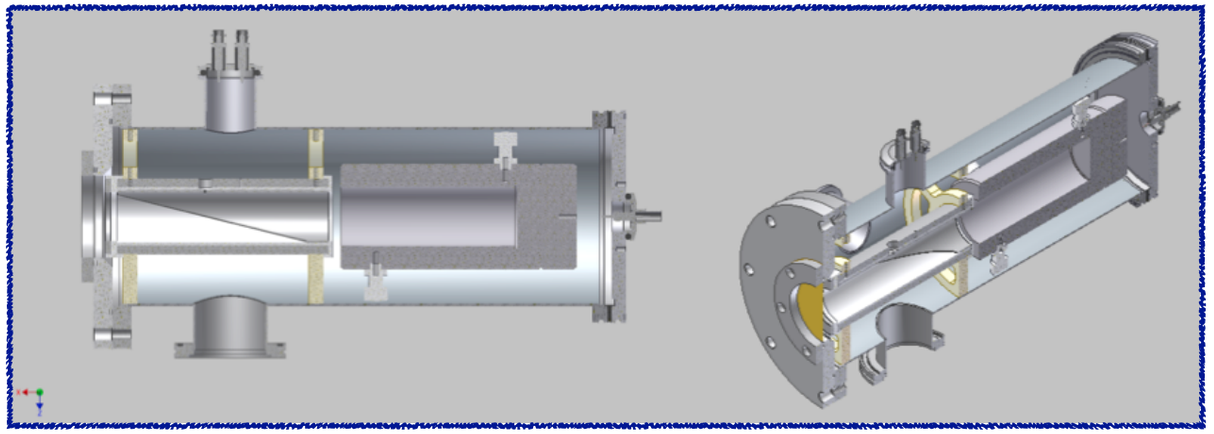
- Plasma diagnostic: x-rays, Vis & UV ICCD camera
- Diagnostic with pixel CMOS detector
- AC thoroids for non-intercepting diagnostic: design and realisation
- TOF detector assembly and measurements
  - SiC, diamond, ICR characterization and laser-driven tests
- Fast faraday cup for fast measurements

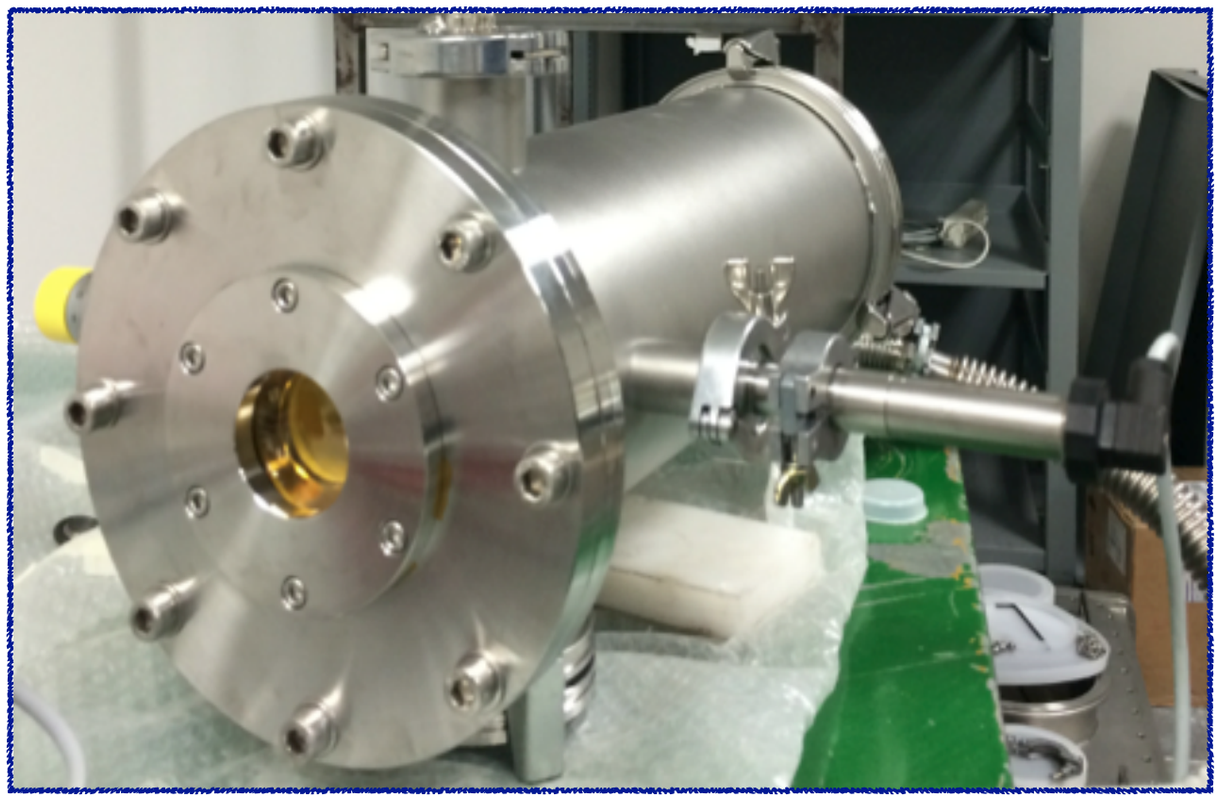
Milestones and activity WP3 - 2014

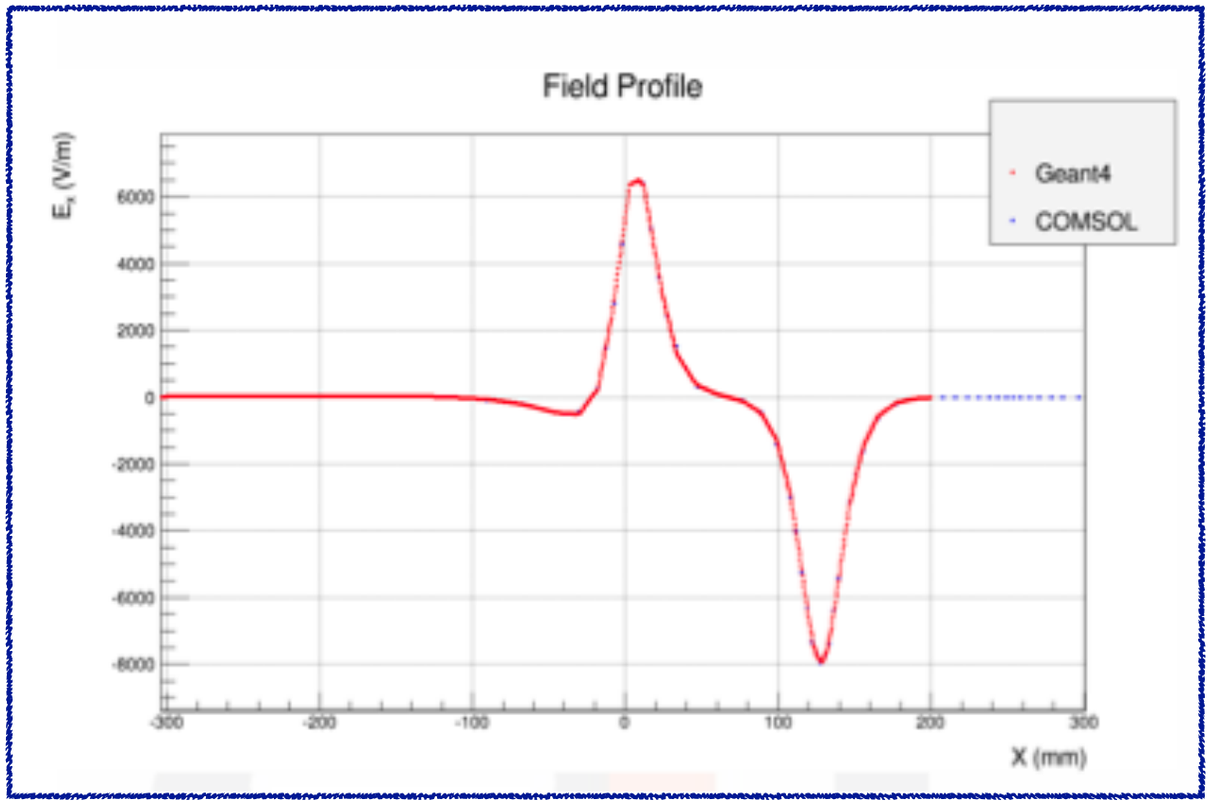
- Detectors for dosimetry
  - Faraday cup realisation coupled with transmission chambers
  - ELIMON
  - Integrated system
- Monte Carlo simulations
  - Present and future facilities
  - Evaluation of te transported beam
  - Detector development (CR39, Gafchromic, Scintillating spectrometer, ...)
  - Shielding
- Experimental tests: Taranis, FLAME (?), LOA (?)
- LNS tests

Absolute dosimetry Faraday Cup









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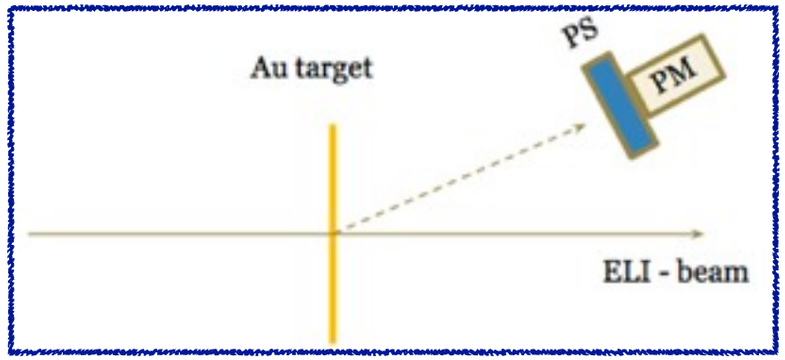
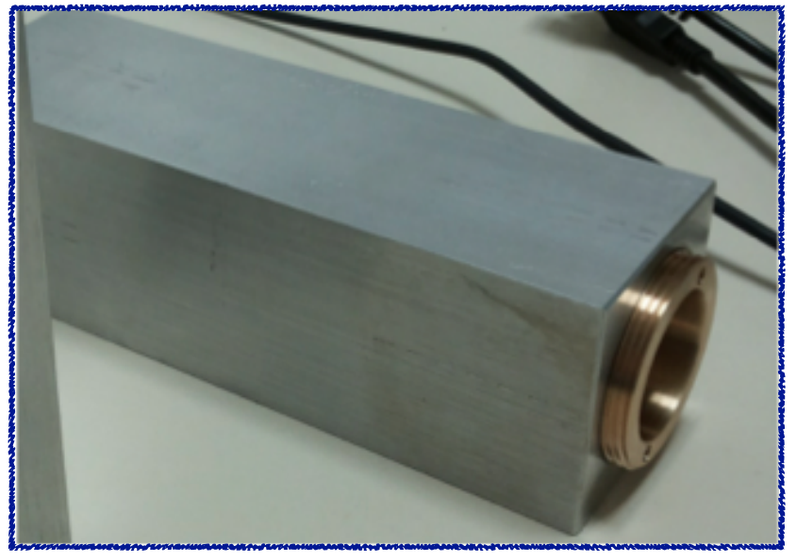
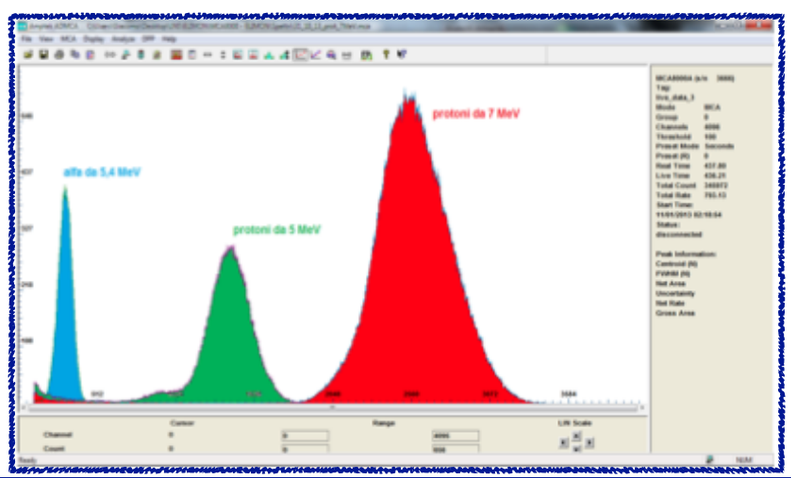
ELIMON: on-line fluence measurements

- Preliminary tests with 5-7 MeV protons (LNS) in air; Calibration of its dynamic range
- EM noise tests currently ongoing at PALS (Prague)







INFN LNS

2015

Milestones - 2015

- Experimental campaigns with the developed targets and devices
  - FLAME, Taranis, GIST, LOA, Pisa
- Final Monte Carlo design of a laser-driven transprt beam line: optimisation, dosimetry radioprotection
- Final radiobiology tests

Richieste

- Inventory
  - Bias supply for the FC (1)
  - Schede varie (a 16 bit 1 Msample per diodio, scheda FPGA e 4 canaliADC a 16 bit pr CMOS) ....
  - Bias for the dosimetric FC + electrometer (20)
- Apparata
  - Laser spot imaging system .... quantificare
  - Control of the PMQ+ESS system (10)
  - Water chiller for the CCD X-Rays (5)
  - Mechanics for in-vacuum movments (4)
  - Dosimetric system (15)
- Consumables
  - Materials and gas for targets (4)
  - CVD and SiC detector (6)
  - GAF and CR39 (5)
  - Gas per il funzionamento del laser (Pisa) (3)
- Transports
  - 4.0
- Travels
  - 30 K€

Requests summary

	Request [k€]	S.J. request [k€]
Inventory	25	
Apparata	35	
Consumables	18	
Softwares	1	
Transports		5*
Travels	10	20*
Total [k€]	89	25
Grand total [k€]		**114**

** Linked to the experimental campaigns*

ELIMED 2013

Section	FTE
Bologna	1.4
Messina	5.7
LNL	0.6
LNS	11.5

TOTAL FTE 19.2

ELIMED 2014

Section	FTE
Bologna	4.7
NEW Lecce	2.9
LNL	0.5
LNS	14.9

Section	FTE
Messina	4.7
NEW Milano	6.7
NEW Napoli	3.3
NEW Roma I	3.9

TOTAL FTE 41.6

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