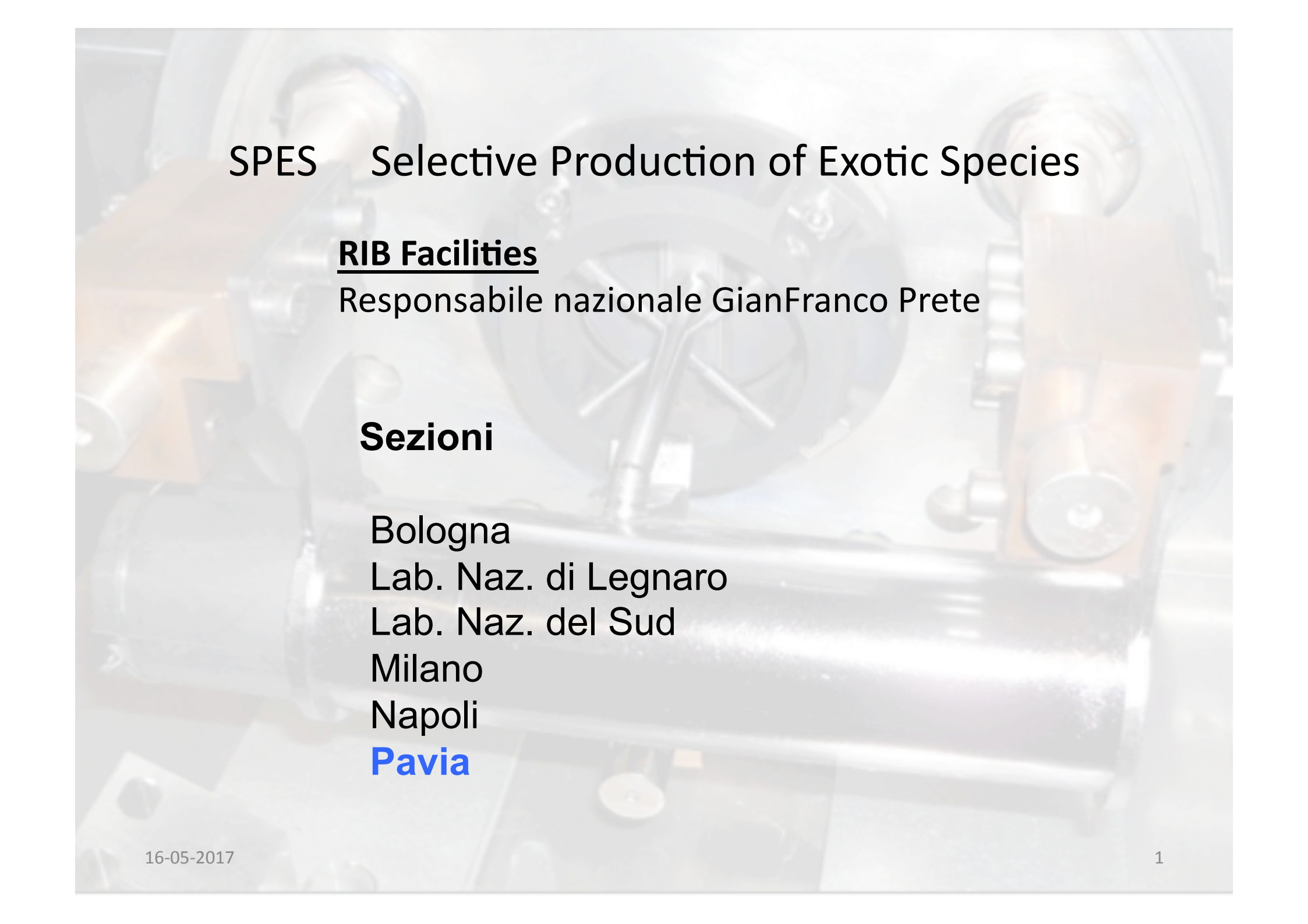




SPES Selective Production of Exotic Species

RIB Facilities

Responsabile nazionale GianFranco Prete

Sezioni

Bologna

Lab. Naz. di Legnaro

Lab. Naz. del Sud

Milano

Napoli

Pavia

Istituzioni esterne all'Ente partecipanti

CERN

ORNL (USA)

ENEA

TRIUMF (Vancouver)

MSU(USA)

GANIL (Francia),

ASL Padova,

Università di Padova (Dipartimenti di Chimica e
Ingegneria)

Universita' di Palermo (Dipartimento di Ing.Nucleare)

LASA (Milano).

IPNO Orsay (Francia) nuova collaborazione

SPES PAVIA

Laboratorio di Spettroscopia Laser (prof. Piero Benetti):

Alessandra Tomaselli	ric. DIII: responsabile attività laser (70%)
Federico Pirzio	ric. DIII(20%)
Damiano Grassi	tecnico cat. D, Dip. Chimica (30%)
Scarpa Daniele	art. 23 LNL (20%)
Martina Iannelli	tirocinante Pavia

NESSUN FINANZIAMENTO PER IL 2016

se non le missioni estere e italiane per Tomaselli, Grassi e Iannelli

WP3

Resonant Ionization Laser Ion Source Pavia Group



ATTIVITÀ

TOF

Realizzazione Spettrometro di Massa a Tempo di volo
(ablation source)

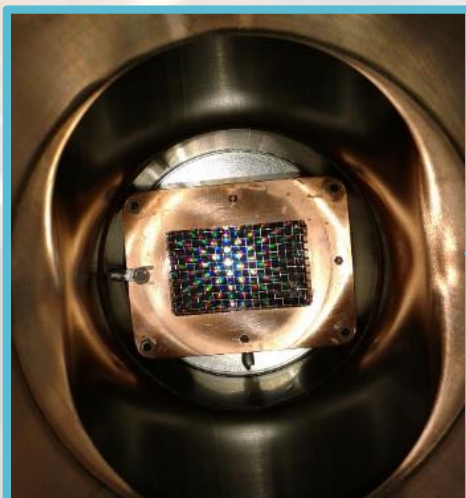
Test e caratterizzazione

Realizzazione sorgente a fornetto

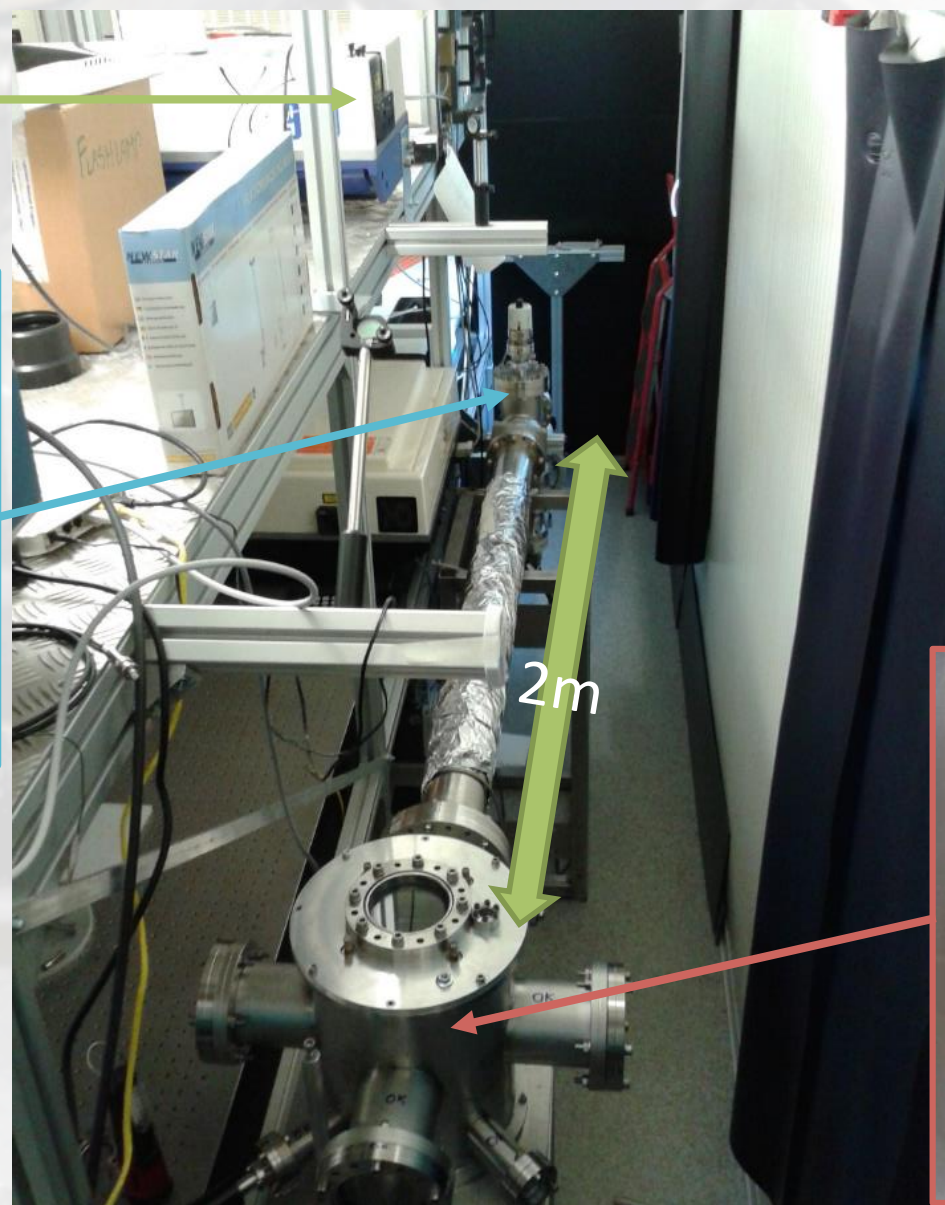
Home-made ToF (ablation source)

Home made Time of Flight Mass Spectrometer:

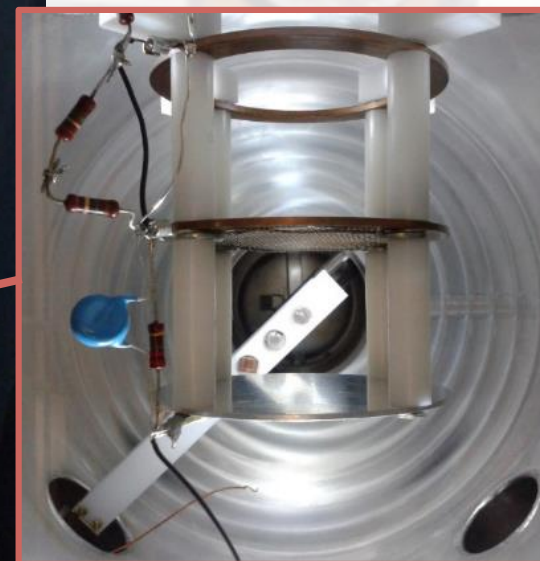
Source (1):
Quantel
1064nm for
laser ablation



Detector:
After 1,9 m
flight, ions
impact on
40x60 cm²
MCP

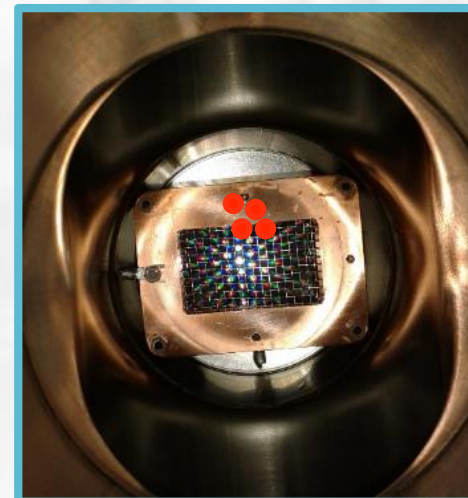
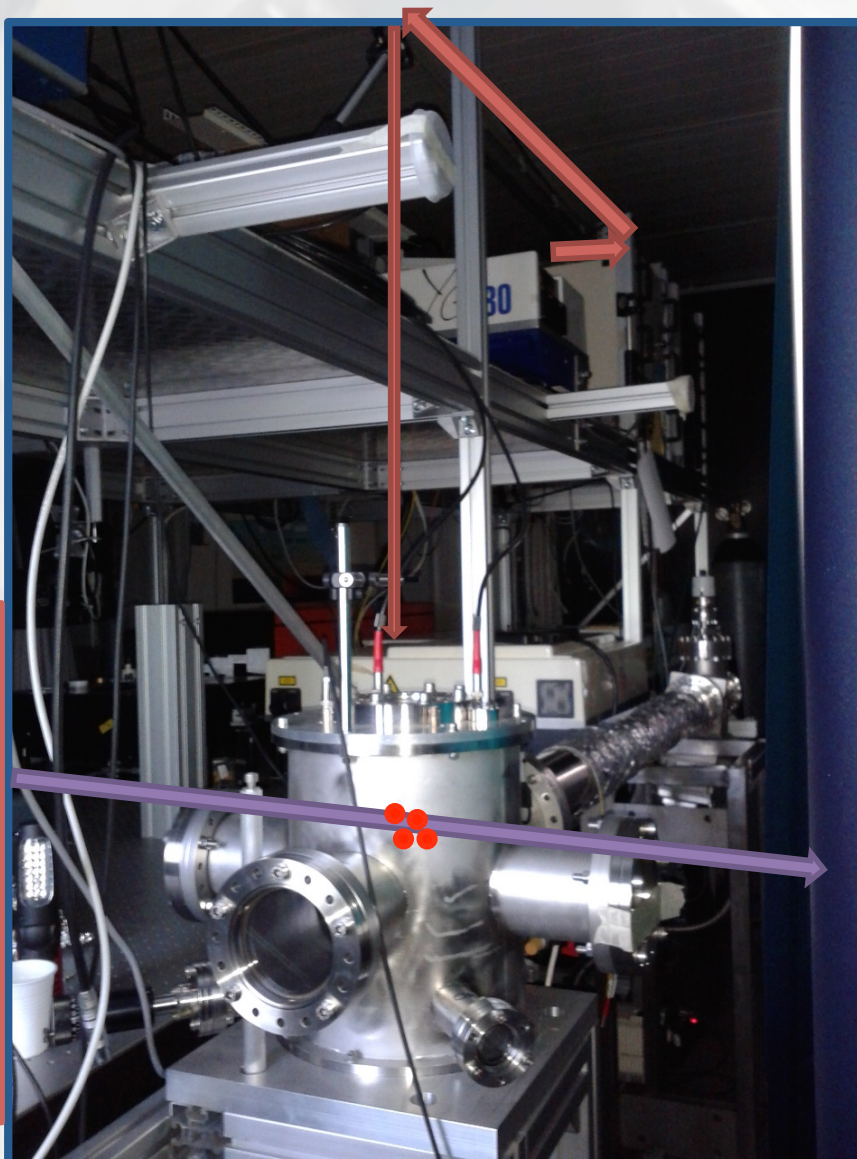
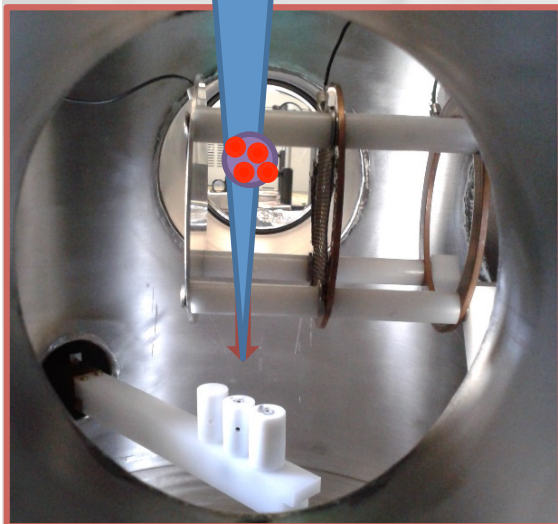
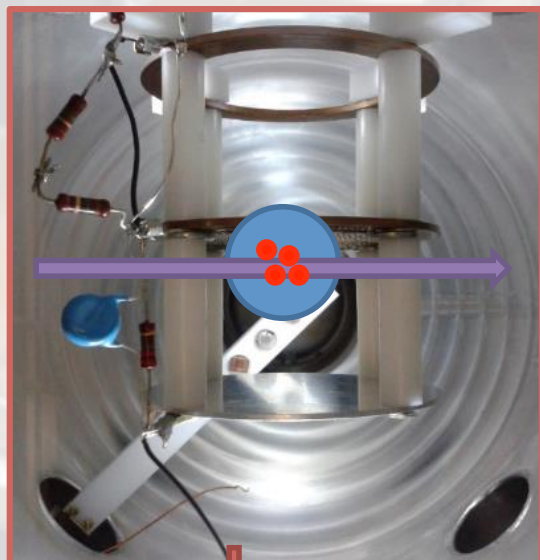


Source (2):
Multi cup with
elements of interest.
Laser ablation to
generate atoms
plume and laser
resonant ionization
as trigger for time of
flight count



Home-made ToF (ablation source)

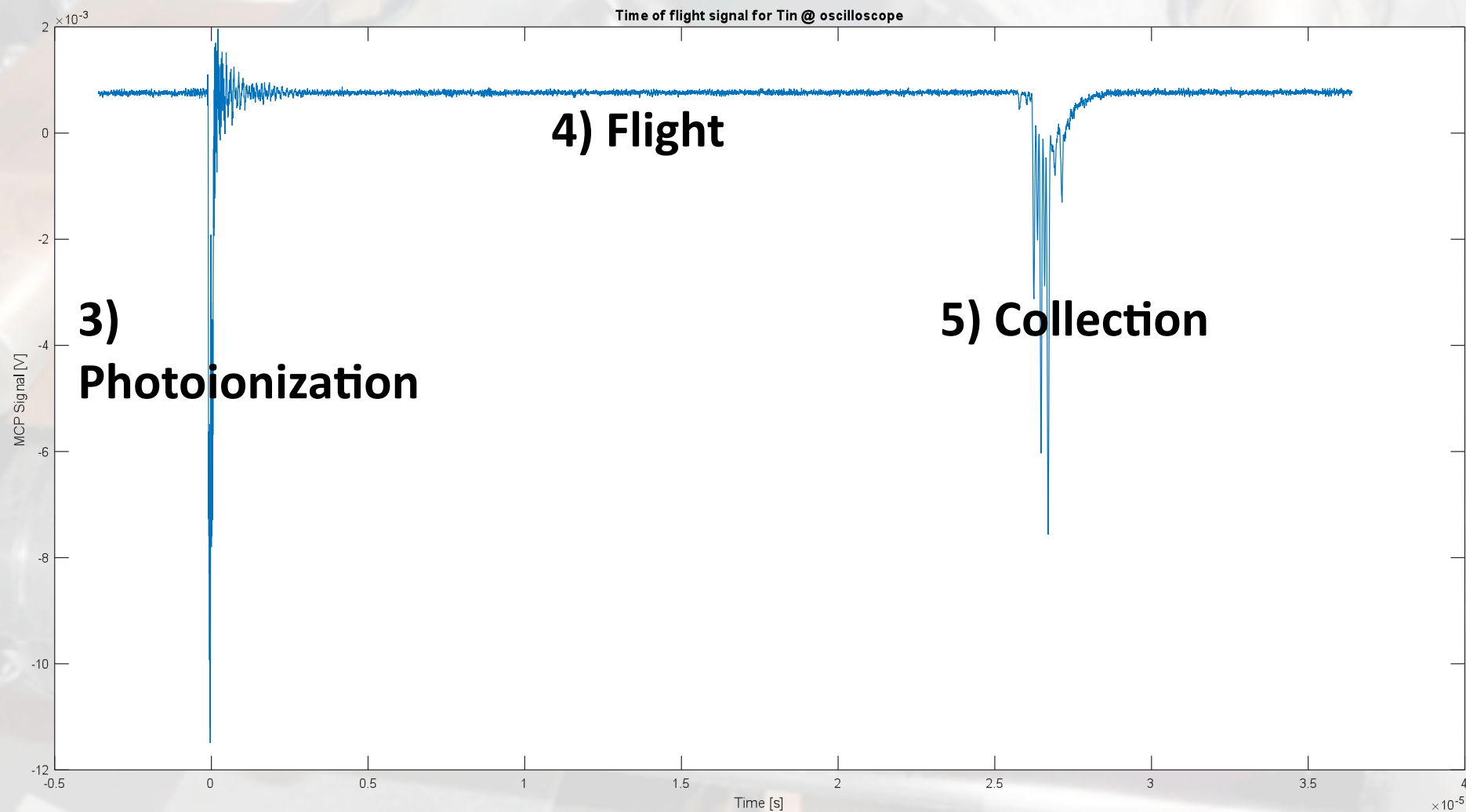
Measure Sequence:



- 1) Ablation
- 2) Plume Expansion
- 3) Photoionization
- 4) Flight
- 5) Collection

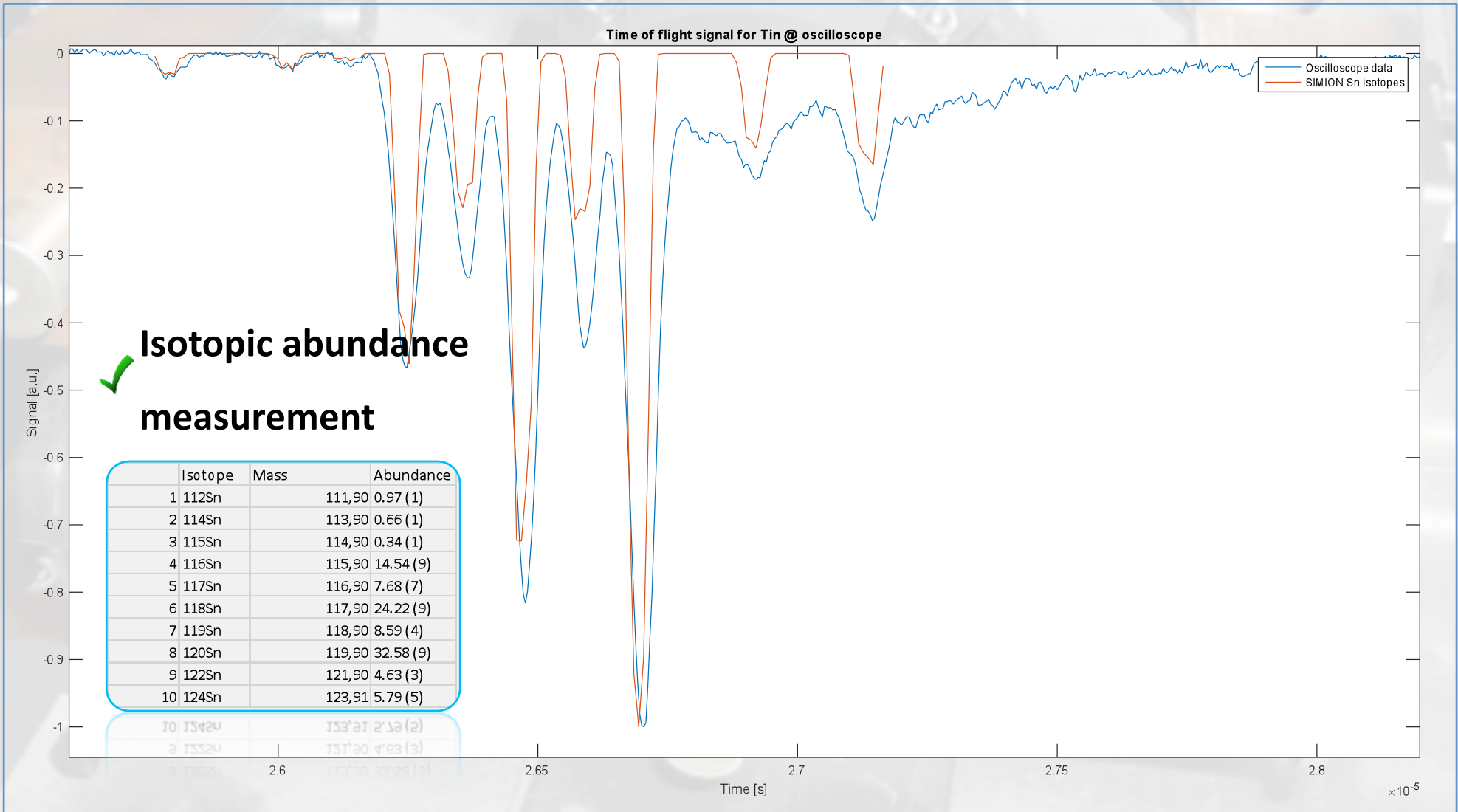
Home-made ToF (ablation source)

Typical Signal:



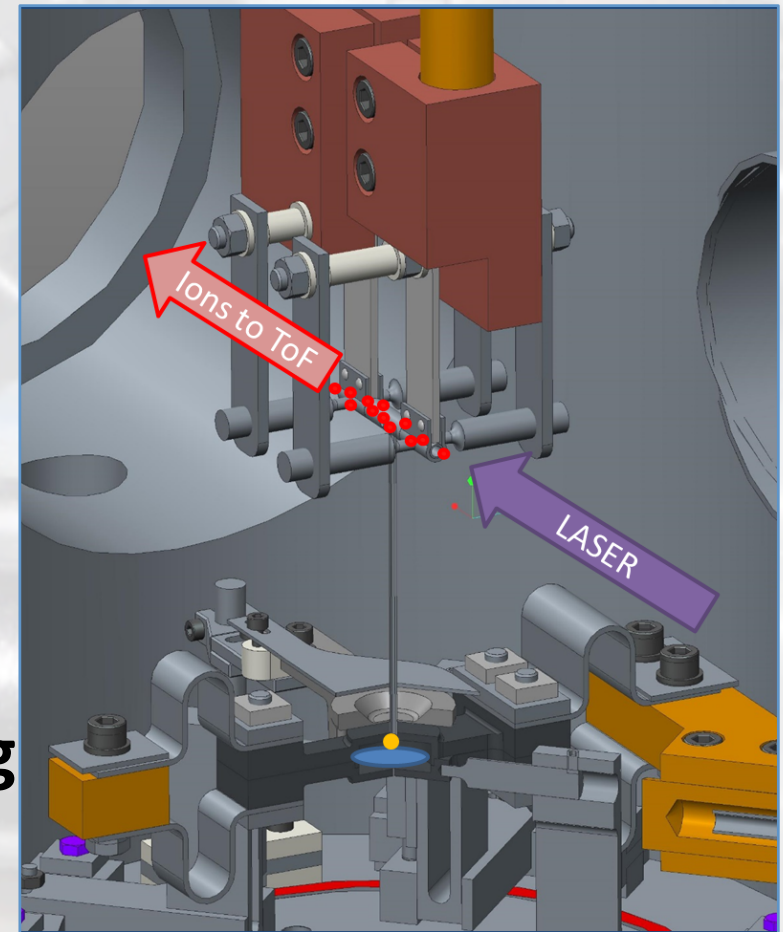
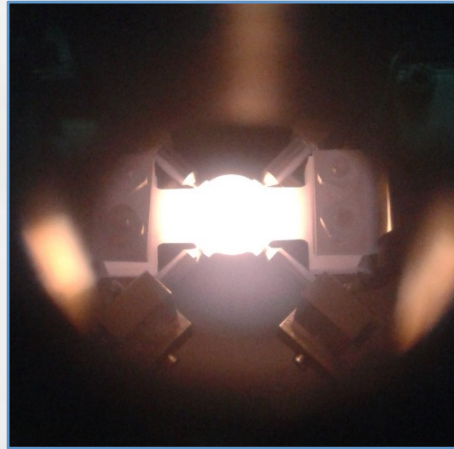
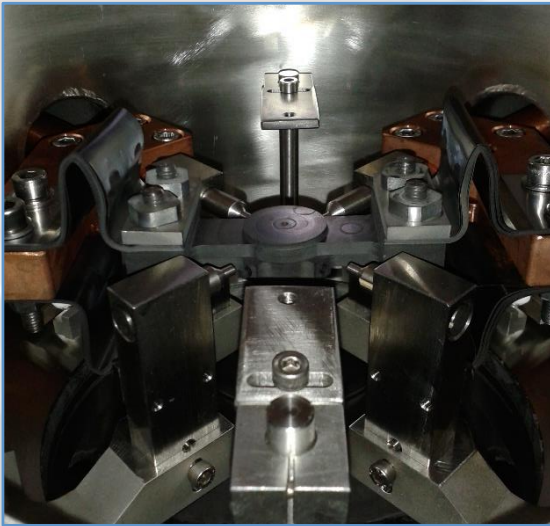
Actual ToF performances: Tin laser resonant ionization

Simion® simulation — VS ToF acquisition — & ToF mass resolution



Laser OFFLINE Laboratory

Development of Laser efficiency measurements apparatus: Laser Front End

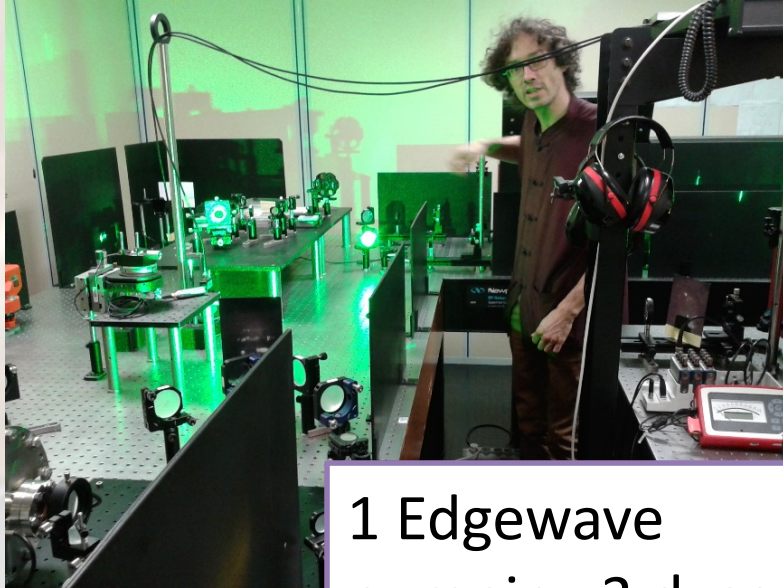


New oven in Time of Flight Mass Spectrometer:

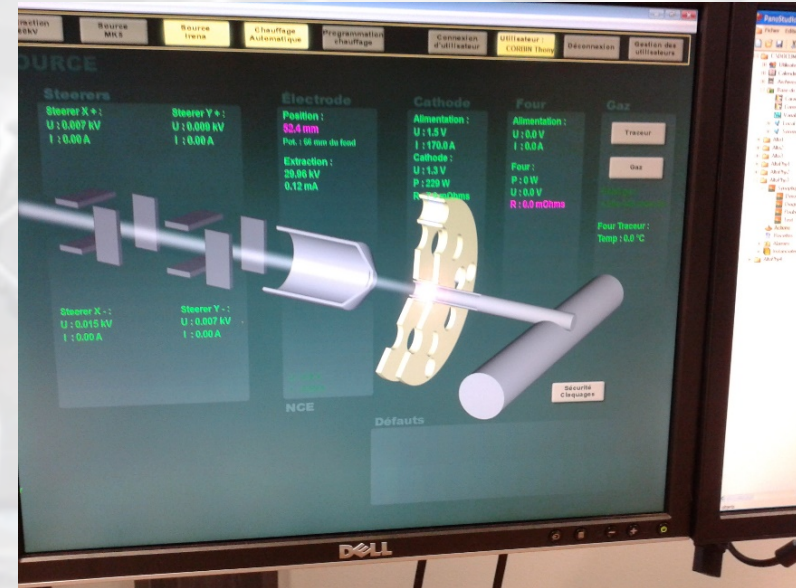
- Thermal characterization ongoing
- New efficiency measurements foreseen in 2018

The Pavia SPES WP3

Meeting @ IPNO (Orsay)



1 Edgewave
pumping 3 dyes

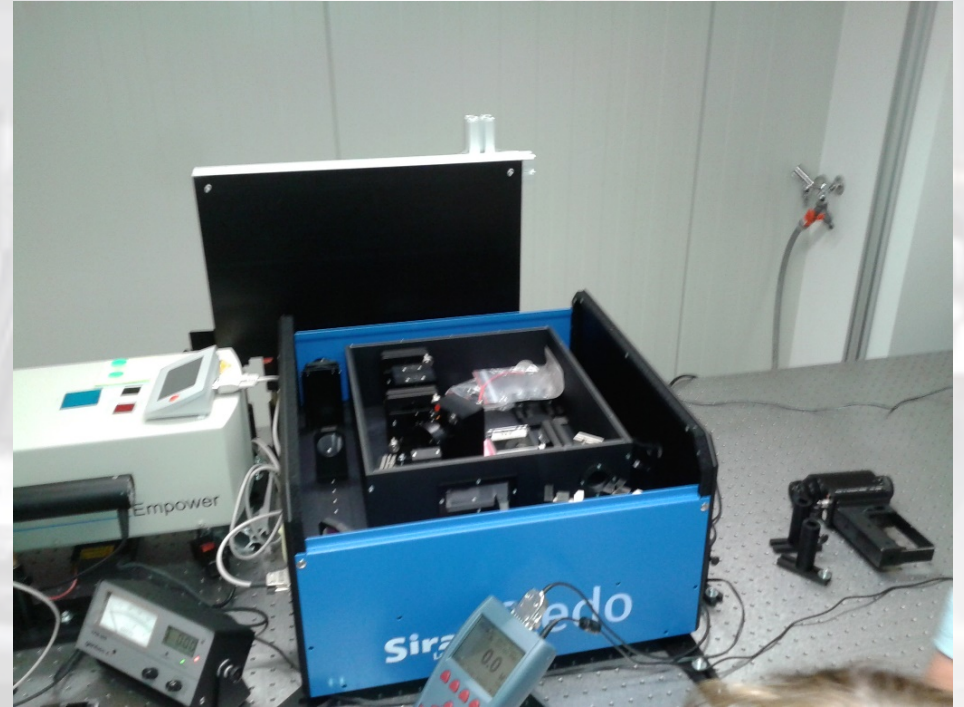


Base for future collaboration:

- meeting @ La3NET workshop 24-25 October 2016 (Paris)
- Interested in laser FE
- Electrostatic beam transport

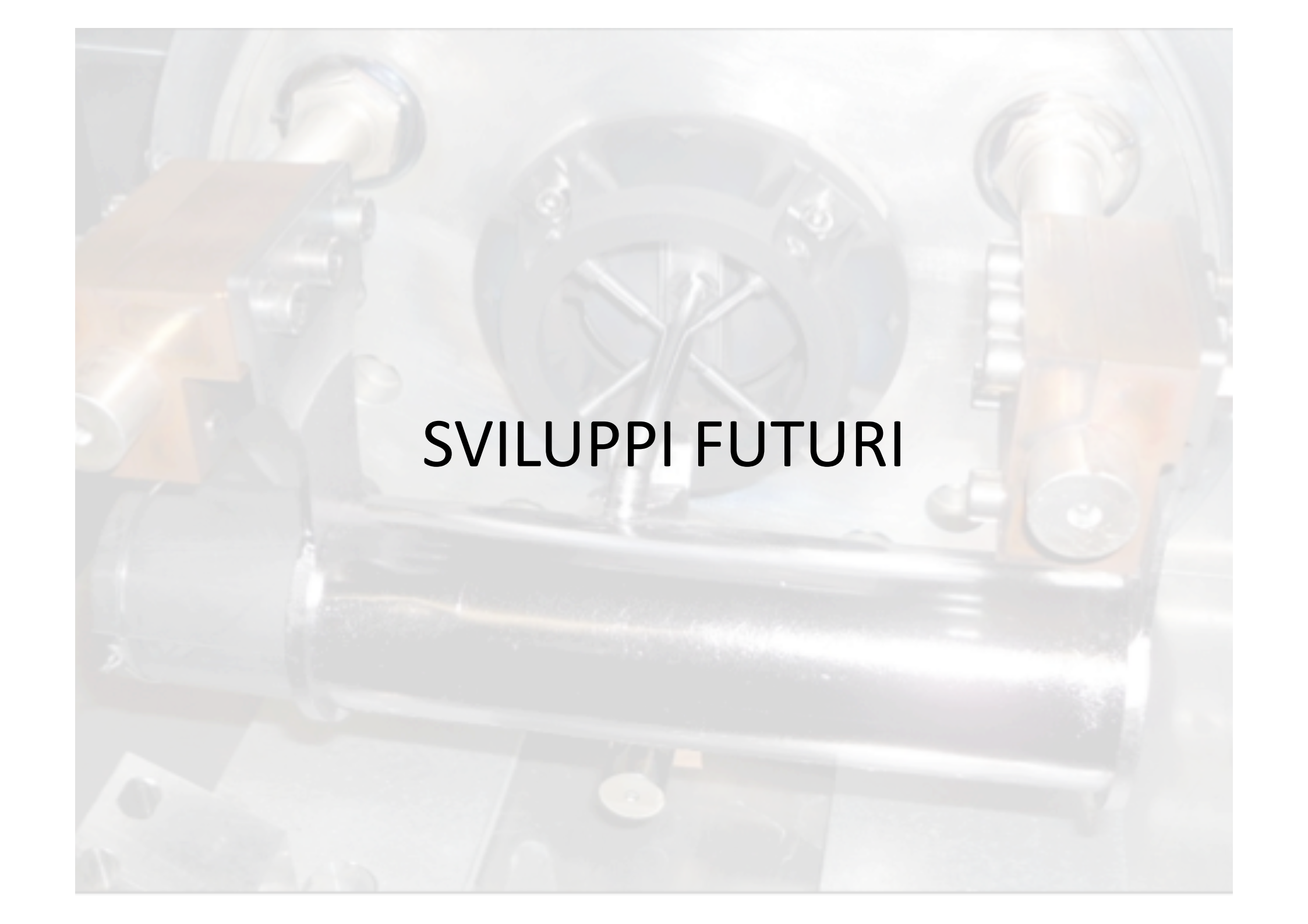
The Pavia SPES WP3

Meeting @ Sirah®



Survey on new SS laser manufacturing:

- Laser under development
- New prototype solution for better performances
- Timetable reviewed

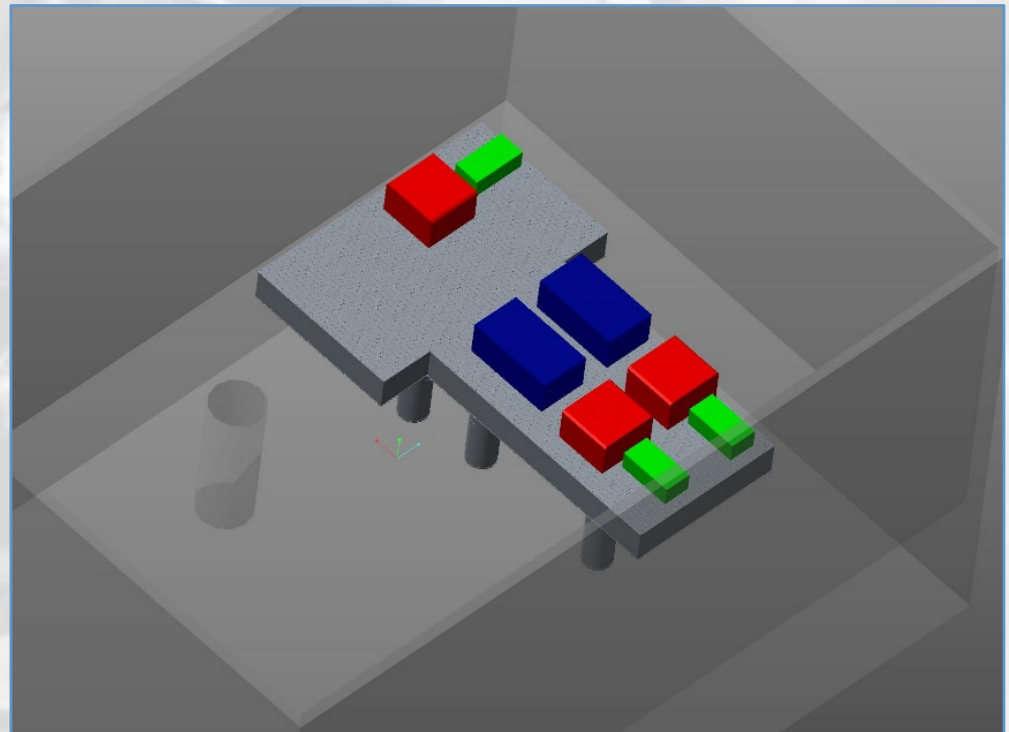
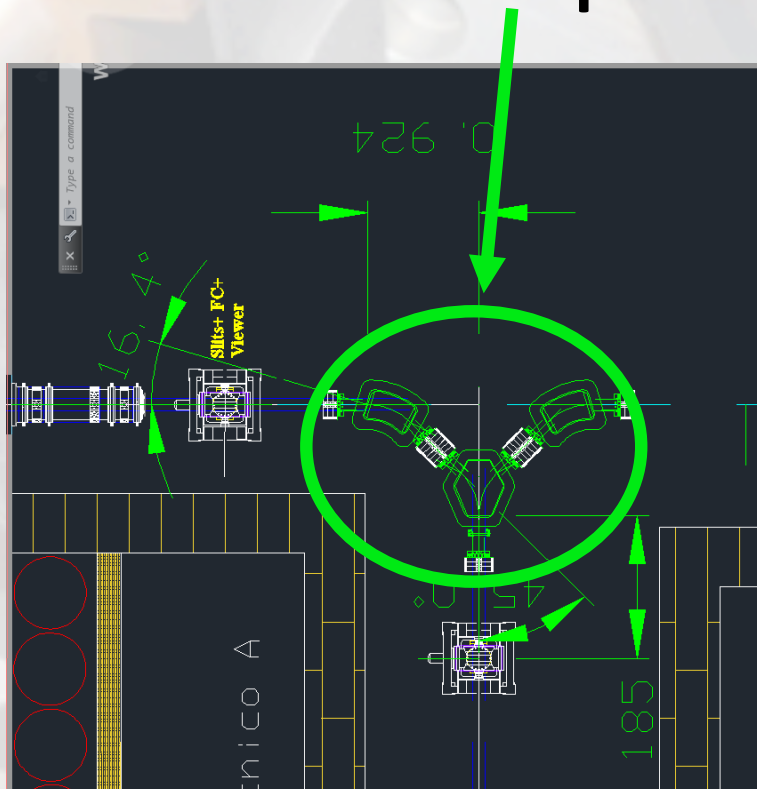


SVILUPPI FUTURI

Laser ONLINE Laboratory

Items:

- **Optical tables: Delivery end 2017**
- **Solid State Laser System: Delivery end 2017 – begin 2018**
- **Laser Laboratory: Delivery Begin 2018**
- **New low mass separation: Tender in preparation**



- 2016



PUBLISHED BY IOP PUBLISHING FOR SISSA MEDIALAB

RECEIVED: *June 15, 2016*

ACCEPTED: *August 26, 2016*

PUBLISHED: *September 1, 2016*

4TH INTERNATIONAL CONFERENCE FRONTIERS IN DIAGNOSTICS TECHNOLOGIES

30 MARCH 2016 TO 1 APRIL 2016

FRASCATI, ROME, ITALY

ToF diagnostic of Tin resonant laser photoionization in SPES laser offline laboratory

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A. Tomaselli,^f R. Cecchi^c and L. Stiazzini^c**