

Aim is to create a **short, intense** and **high charge-state** beam to inject into the PS Booster

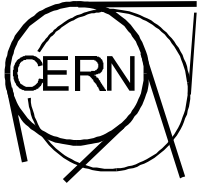
Beam parameters:

$\text{Pb}^{25+}$

9mA from source - 5mA from the Linac -  $7 \times 10^9$  ions from the Linac

5.5 $\mu\text{s}$  pulse length (1 turn PSB injection)

Emittance is critical



## Some History

1989 Lumonics Laser (30J - 1/30 Hz) installed

1994 Al ions from RFQ-O<sub>2</sub>

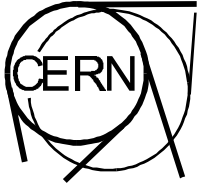
1996 Ta ions from RFQ-LIS

1997 Master Oscillator (MO) installed

1998 Change of source configuration

1999 Gridded Electro-static Lens installed

*2001 100J laser installed*



## Key issues for the final source

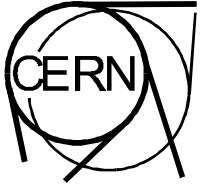
Laser - *reliability and stability*

1Hz performance -  $P_{average} = 100 \text{ W}$

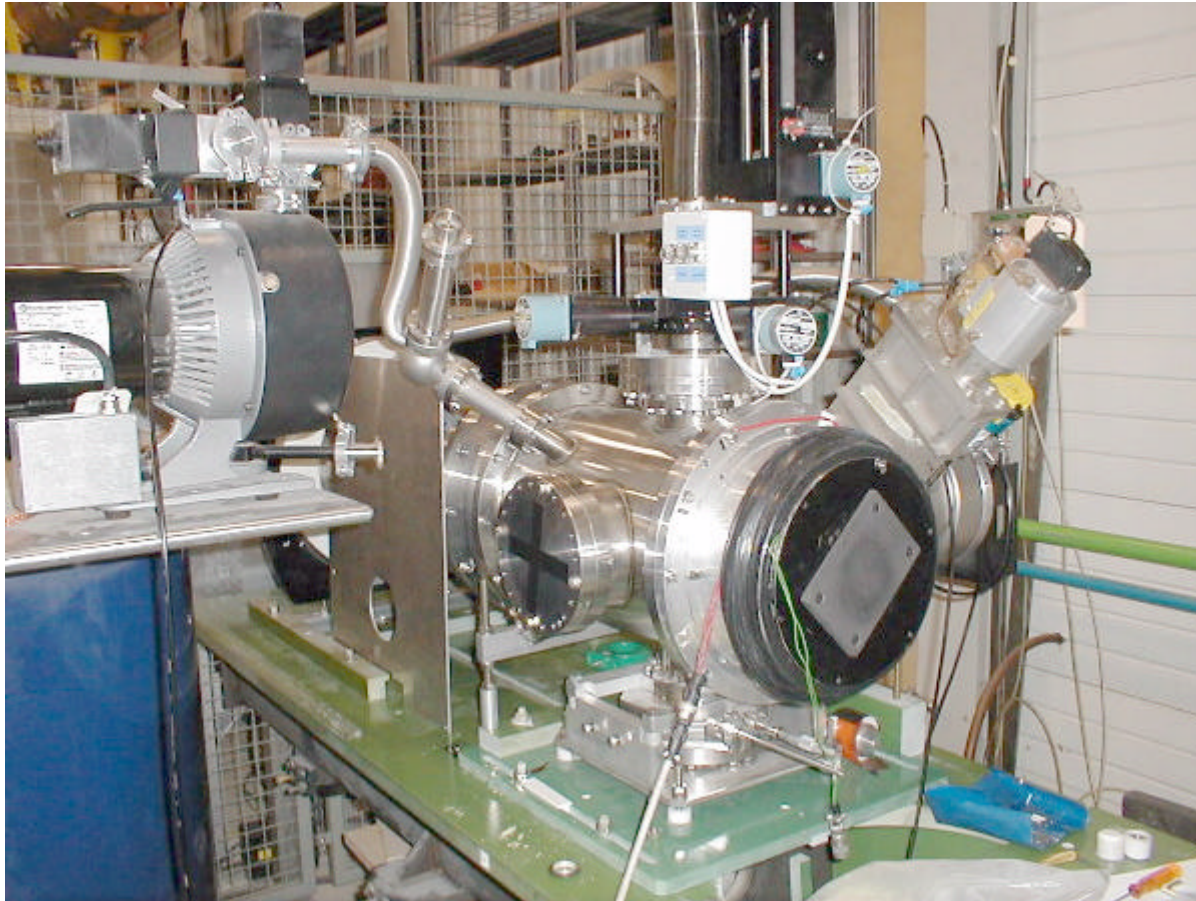
Extraction - *high current beam >100mA pulsed current*

Matching to RFQ - *transmission and lifetime*

Ion beam parameters - *stability and emittance*

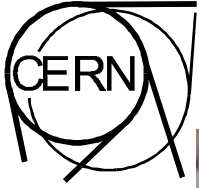


The *old* source - dismantled in February 2001



*CERN Laser Ion Source*

*R Scrivens*



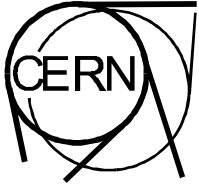
The new high voltage cage - assembled in March 2001



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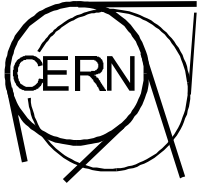


The old laser - to fire it's final shots in May 2001



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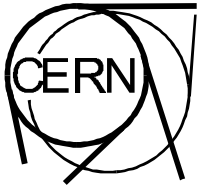
The Master Oscillator - to be moved in the summer of 2001



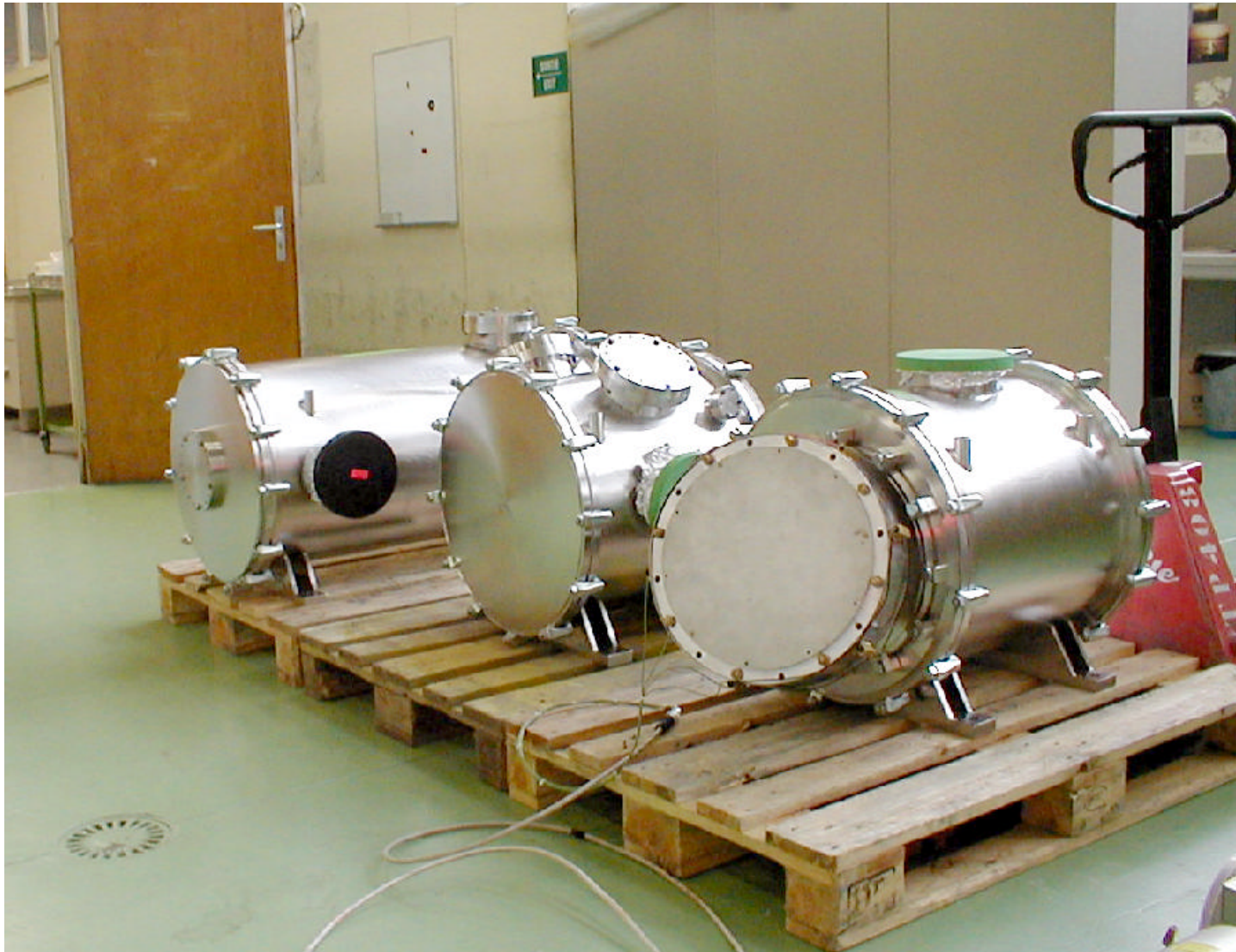
*CERN Laser Ion Source*

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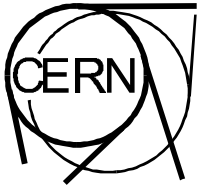
The *new* source - to be assembled in May 2001



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## 3D calculations of extraction - using KOBRA3

