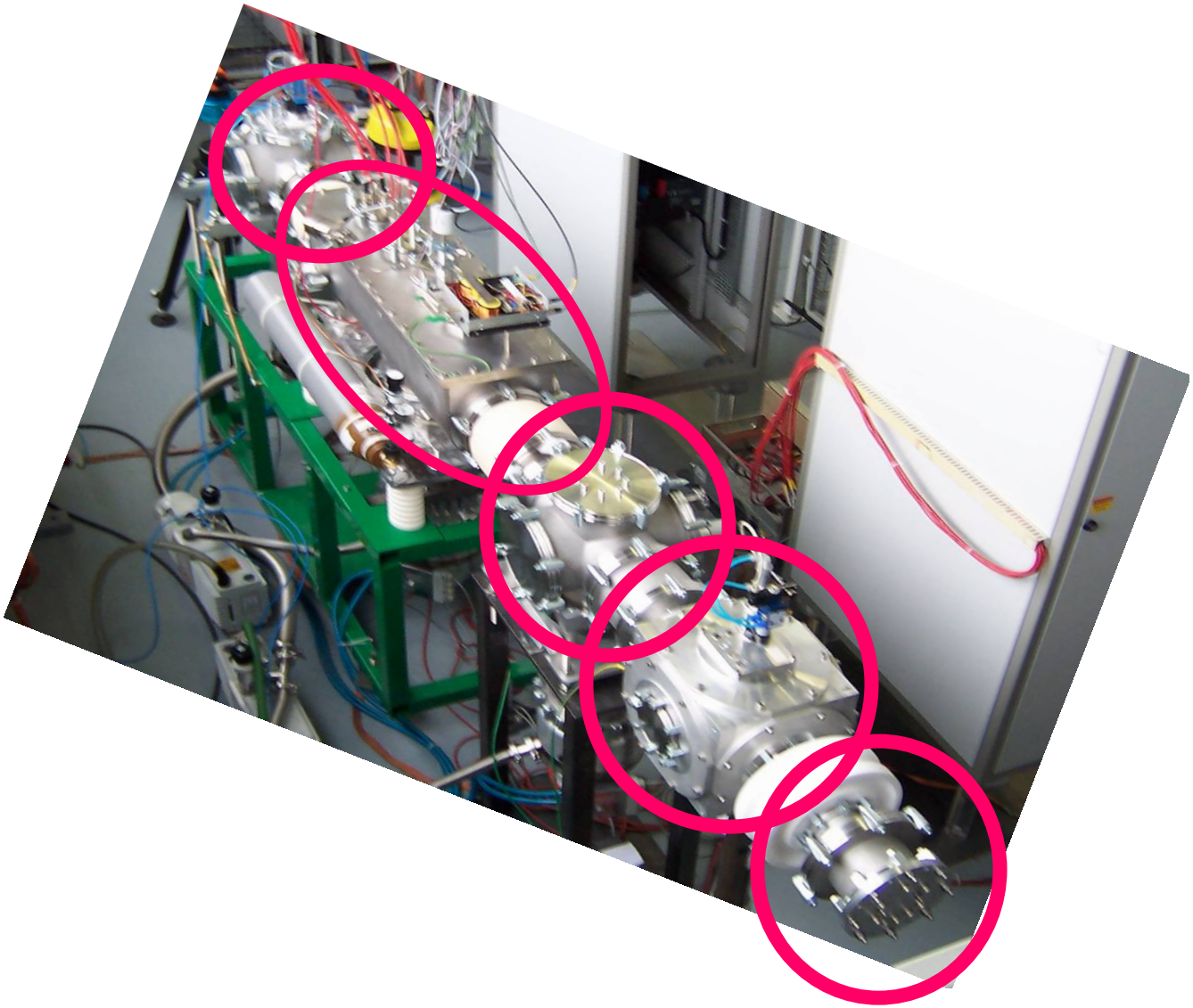
Installation meeting

- Requirements
  - Physics
  - Technical
- Obtained results
  - Documentation
  - Publication(s)
- Installation resources
  - Personnel
  - Time needed
- On-line tests
  - Target
    - Isotopes
  - Equipment
    - Set-ups

Aims of the off-line tests

- Transmission efficiency
  - As a function of the mass
    - Alkali ions Li, Na, K, Cs
    - Ar / noble gases from a FEBIAD source
  - CW and pulsed mode
- Beam quality improvements
  - Emittance measurements
  - Time and energy spread of the bunches
- Specific issues
  - Space charge limit with bunched beams
  - Recombination of noble gases with impurities

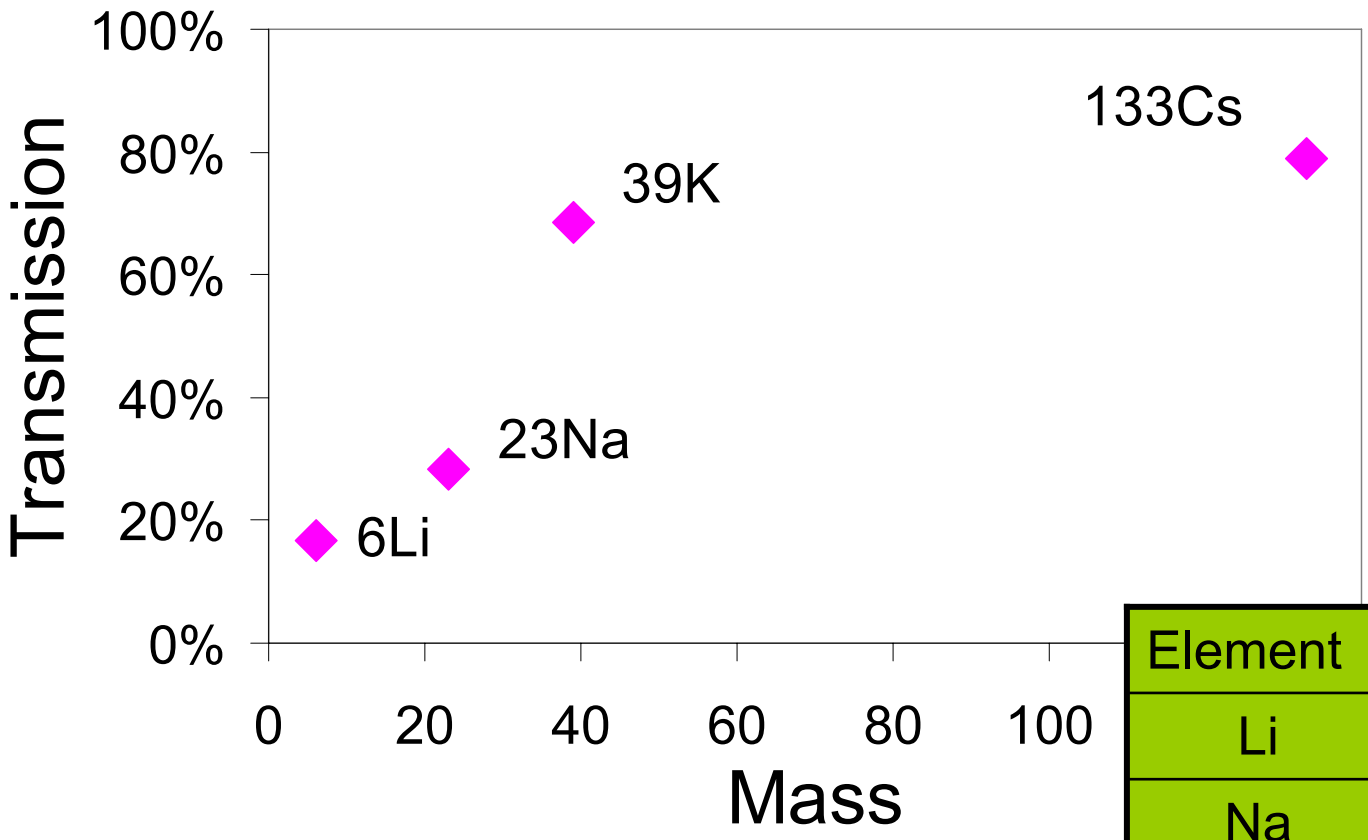
ISCOOL off-line tests



- RFQ
- RF Oscillator
- Test ion source
- 2 FCs for diagnostics
- Quadrupole Triplet

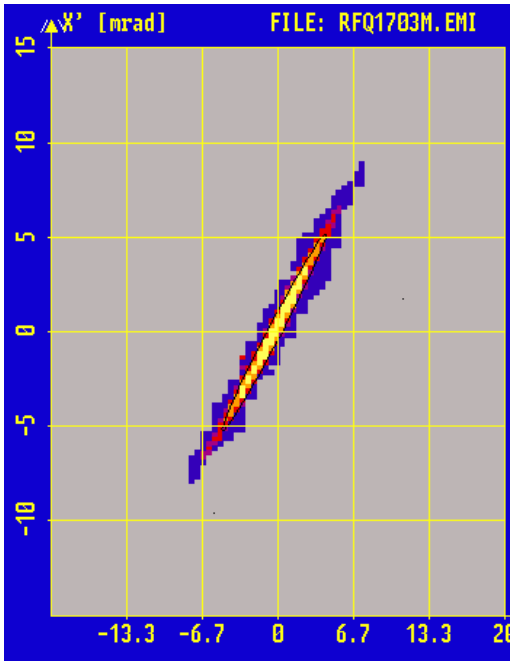
Obtained results

Transmissions

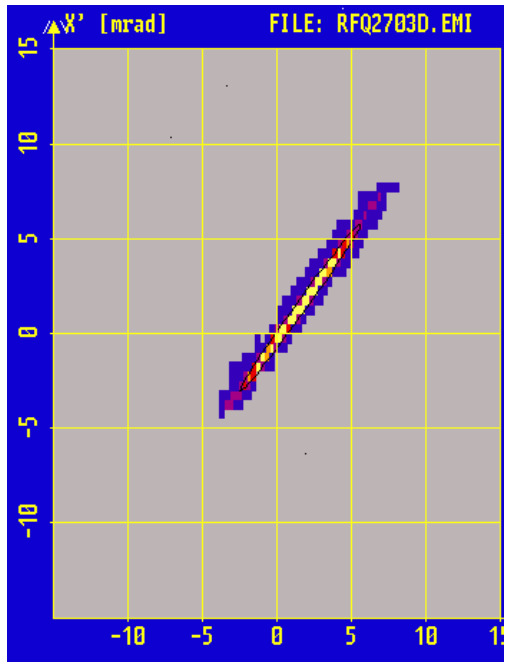


Element	Transmission
Li	17 %
Na	28 %
K	68 %
Cs	79 %

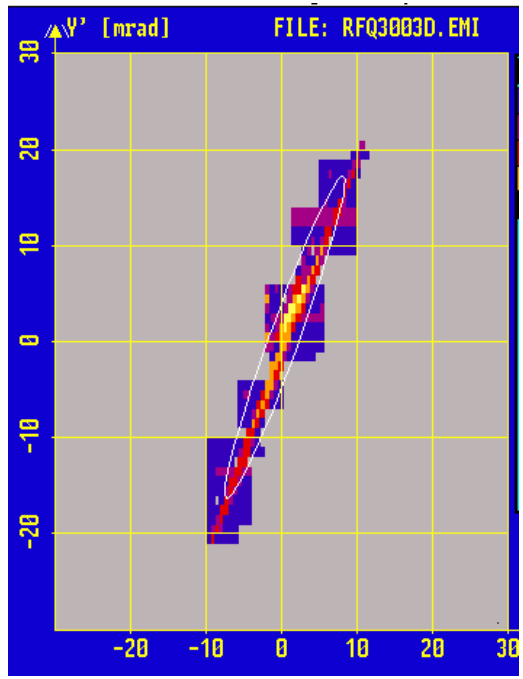
Emittance measurements



KV-plane 4 mm mrad emittance after the RFQ with 50 % transmission



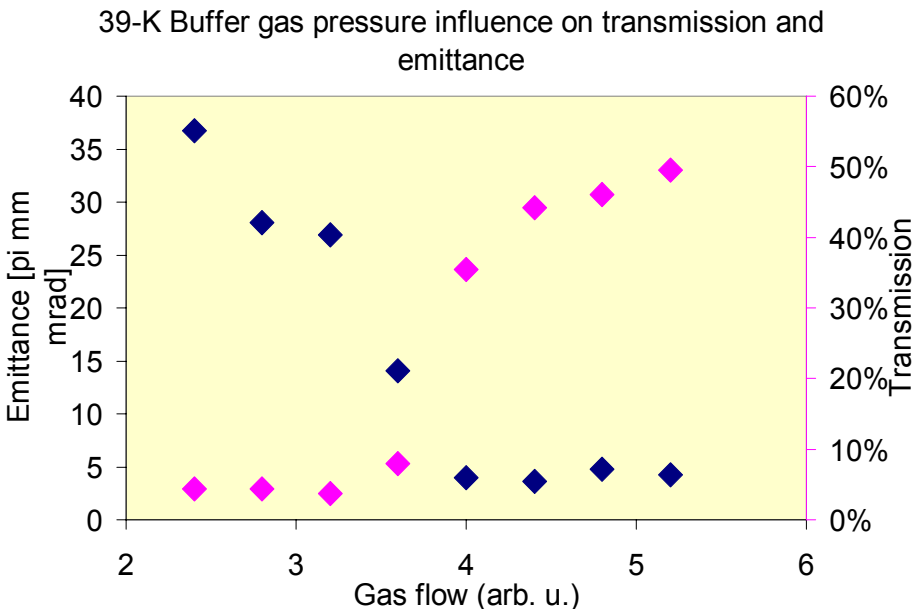
2 mm mrad in emittance in the KV-plane after the RFQ with 60 % transmission



33 mm mrad emittance in the KV plane directly from the ion source

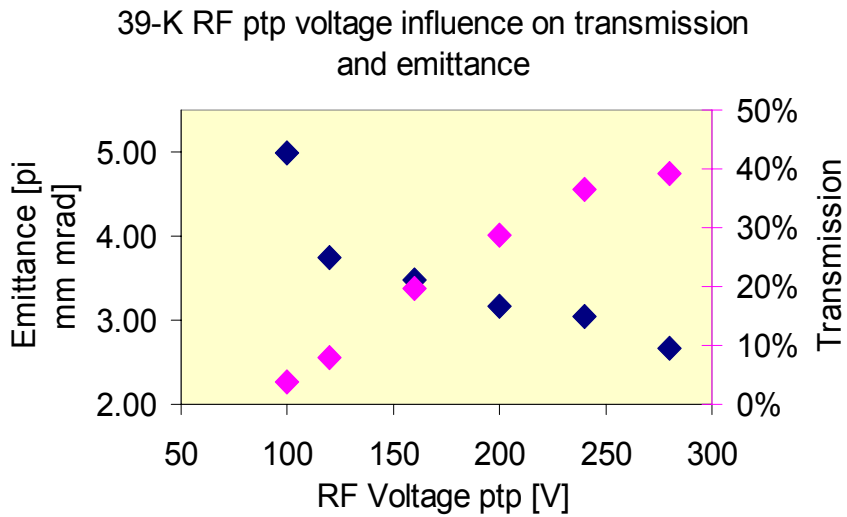
Ion cooling

CW mode



Element	Emittance
Ion source	>35 π•mm•mrad
Without cooling	>35 π•mm•mrad
With cooling Cs	ε_{95}= 2.2 π•mm•mrad 60% transmission
Na	ε_{95}=2.95 π•mm•mrad 23 % transmission

When optimizing the buffer gas pressure or the RF voltage the emittance decreases as transmission efficiency increases



Bunched beams

- Preliminary tests with Na ions
  - Transmission close to CW operation (> 20 %)
  - Space charge limits in transmission efficiency not seen up to 10^6-10^7 ions/bunch
  - BUT: long bunches > 50 μs
    - may be due to the (too) simple extraction scheme adopted up to now – pulsing of the extraction plate only

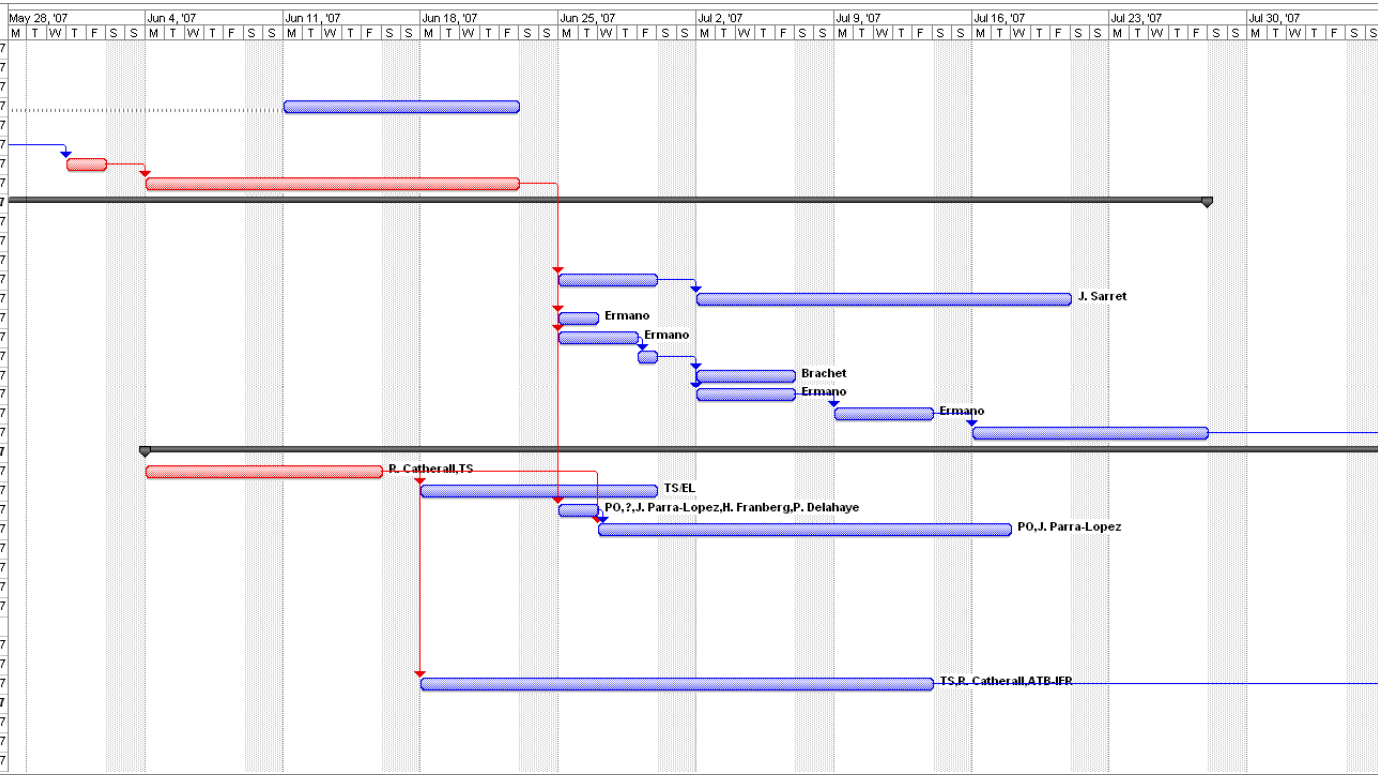
Next steps

- Off-line commissioning
  - Tests with a FEBIAD ion source (Ar) - June
    - ISOLDE-like ion source
    - Charge recombination in the buffer gas?
  - Tests of the bunching mode with a better extraction scheme
    - Pulsing the extraction plate and the last segments of the buncher
- Installation
  - HV platform - June
  - Installation of the RFQ - October

Installation resources

Installation schedule

ID	Task Name	Duration	Start
13	ELEPHANT availible	2.8 wks	Tue 3/13/07
14	Installation of MCP detector	1 day?	Thu 3/22/07
15	Install electronics forMCP detector	2 days	Fri 3/23/07
16	Tests: Bunching mode, rf oscillator	4 wks	Mon 4/16/07
17	Preparation work FEBIAD	1 mon	Thu 2/1/07
18	Testing FEBIAD on the off-line separator	1 day?	Thu 5/10/07
19	Installation of FEBIAD ion source at the RFQ	2 days	Thu 5/31/07
20	Tests of gas ion sources and ISOLDE type of extraction	3 wks	Mon 6/4/07
21	**Preparation of the RFQ before installation in bld.170**	**120 days?**	**Mon 2/12/07**
22	Primary pumps connection	2 wks	Mon 2/12/07
23	Connections for water cooling	1 day?	Mon 3/12/07
24	Externa alignmentl targets design	2 wks	Mon 3/5/07
25	Redoing inner connections of the electrodes	1 wk	Mon 6/25/07
26	Installation of alignment targets on the RFQ and the triplets	3 wks	Mon 7/2/07
27	Installation of Gas bottle definetly	2 days	Mon 6/25/07
28	feets for positioning the RFQ trolley	4 days	Mon 6/25/07
29	Making positioning holes for the RFQ trolley	1 day?	Fri 6/29/07
30	supports to be welded for the turbo pumps (waiting for the bellc	1 wk	Mon 7/2/07
31	Modifications for the RFQ trolley (supportage des pompes, make	1 wk	Mon 7/2/07
32	Supports for the Injection triplets need to be modified	1 wk	Mon 7/9/07
33	Painting of the injection triplet support	2 wks	Mon 7/16/07
34	**Installation in 170**	**105 days**	**Mon 6/4/07**
35	Installation of HT platform	2 wks	Mon 6/4/07
36	Installing the Boris tube	2 wks	Mon 6/18/07
37	Dismounting the HT in 275	2 days	Mon 6/25/07
38	Mounting the HT racks and transformers	15 days	Wed 6/27/07
39	Installation of RFQ and triplets	2 days	Mon 10/1/07
40	Alignment of RFQ and triplets	3 days	Wed 10/3/07
41	Cabeling RFQ	5 days	Mon 10/8/07
42	Connection of vacuum and updating of controlls	5 days	Mon 10/15/07
43			
44	Installation water cooling	2 days	Sat 10/20/07
45	Updating vacuum controls of ISOLDE ?	1 wk	Sat 10/20/07
46	Mounting farraday cages and interlocks	4 wks	Mon 6/18/07
47	**Commisioning RFQ**	**14 days**	**Thu 10/25/07**
48	Transmission test of with stable alkalines (mass marker)	5 days	Thu 10/25/07
49	Bunched beams	5 days	Thu 11/1/07
50	Test of bunching mode, radioactive beam.	4 days	Wed 11/7/07



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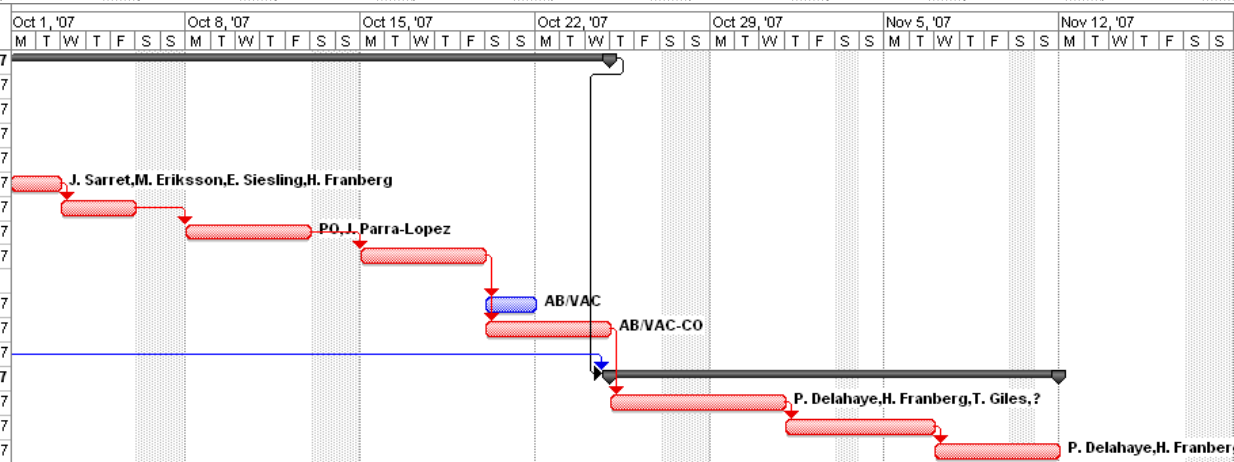

Installation

- Personnel
  - Vacations ?
  - Availability ?
- Time needed ?

- HRS off from 1st of October
- GPS off from 15 October until

Before 1st of October

- Alignment
  - Design and mount external targets on the RFQ.
  - Stefano Marzari, Jerome Sarret
- Technical/mechanical changes:
  - Stefano Marzari, Ermanno Barbero
- Installation of platform
  - TS, R. Catherall
- Installation of Boris tube
  - TS/EL, R. Catherall
- Installation of cage and interlocks
  - TS, ATB-IFR, R. Catherall
- Installation of HT racks and transformers
  - PO: J. Parra-Lopez

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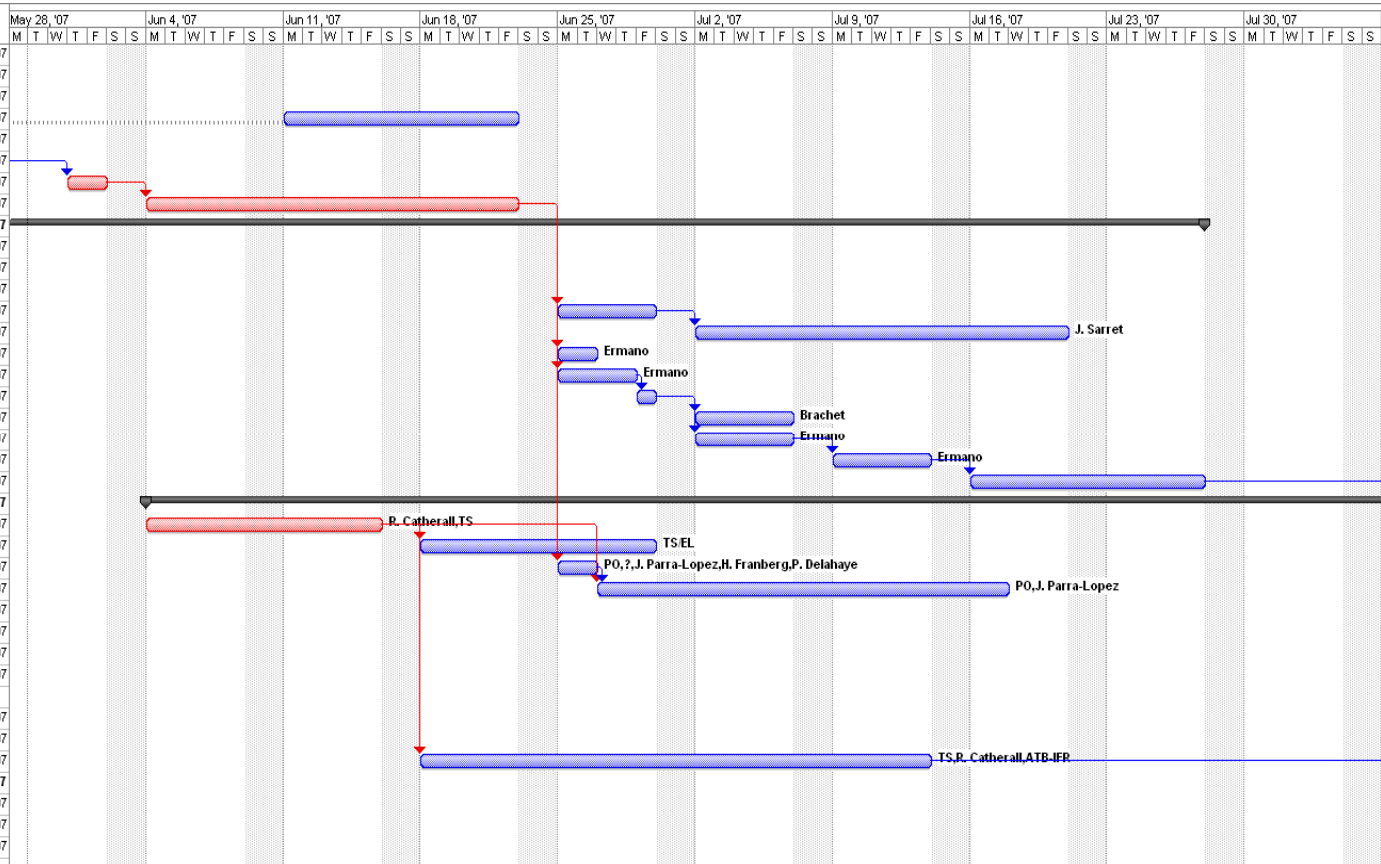

Installation

- Installation of RFQ and triplets
  - J. Sarret and AB/OP
- Alignment of RFQ and triplets
  - J. Sarret and AB/OP
- Connections of water pumps
  - Who?
- Connection of vacuum
  - AB/VAC
- Update of vacuum controls and tests
  - AB/VAC-CO
- Cabling RFQ
  - PO