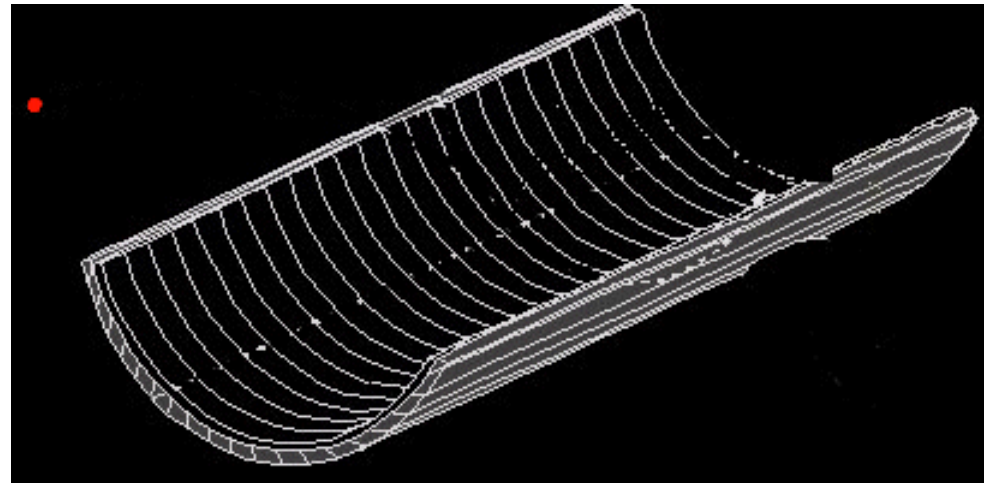


# Timing Counter

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# Timing counter

- Most of the conceptual design for the timing counter has been done in Pisa and presented in PSI on the July 2002 meeting. The new Genoa&Pavia groups, which have just joined the collaboration, will concentrate on a deeper analysis of that project.
- Critical topics are:
- Gain and time resolution in magfield
- Need and possible low cost solution (without PM) for the Z counter
- He atmosphere problem
- Overall mechanics

## PM's for magnetic environment

- Hamamatsu is providing us with two types of PM's suited for high magnetic field environment.
- Both fine mesh type with 19 and 24 dynodes.
- Test of characteristics underway in Pavia and results available next month.

## Z position counters

- The major problem for this counter is the light collection with a PM. Light has to be extracted from the scintillator and brought in a region of low magfield.
- Possibility of using an APD coupled with scintillating optical fibers which should be less sensitive to magnetic field.
- Test of APD's properties are underway in Genoa.
- If the solution is viable, the mechanical setup will be simpler and the cost low.

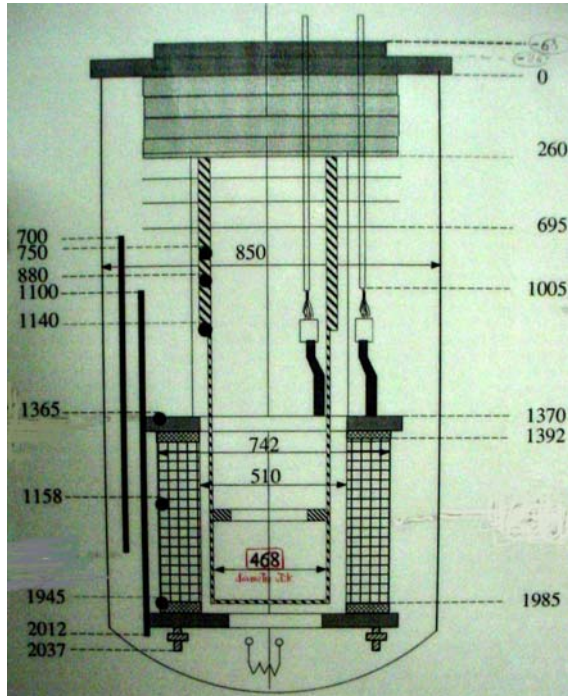
# Measurement in Magnetic Field

PM's have to be tested in an environment similar to the final setup

Check of gain, timing and jitter both as a single PM and assembly of scintillator and two PM's.

A superconducting magnet MA.RI.SA will be used starting this month.

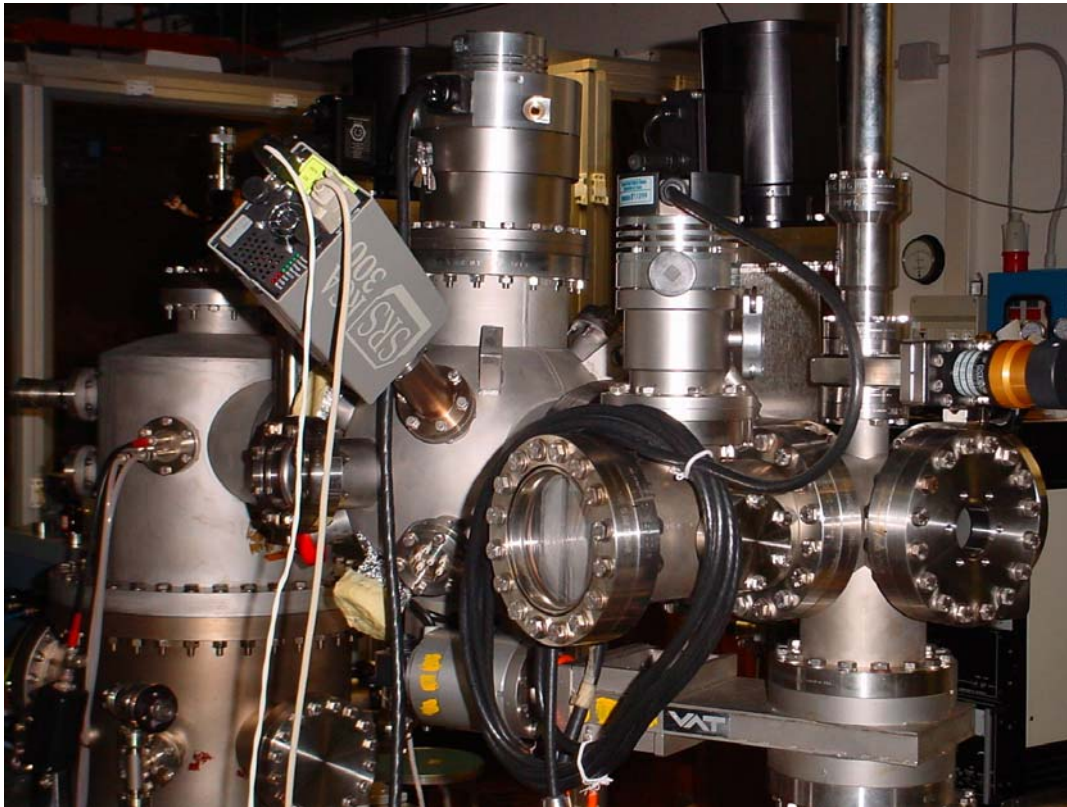
# High Field Facility MA.RI.SA. (Genoa)



# He Confinement

- The timing counter will be operating in He atmosphere.
- In such environment PM's will show anomalous behaviour in very few days. Typical is the afterpulsing that will degrade the timing capabilities of the detector.
- We will study the effectiveness of a bag (Mylar, Poliethylene, etc.) in keeping He out of contact with the PM's.
- Both single PM and PM and scintillator will be under test using as He detector a setup available in Genoa

# System for He diffusion measurement (Genoa)





## Proposed schedule

- We plan to start with PM tests in magnetic field by the end of February and the system scintillating fiber-APD. In parallel to start the tests for He diffusion in glass and in various plastics.
- Both type of tests should last until July 2003.
- By January 2004 mechanical design of the timing counter

## Costs estimate

- For the time being, a raw cost estimate:
- “Parallel” timing counter 540 K\$
- “Z” counter 120 K\$
- Mechanical setup 100 K\$