

# **TOF status report**

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# TOF0+TOF1 refurbishing



- many PMTs of TOF0 are old (2006-2007) and have a preliminary design of the active divider and the valve insulation from mu metal, giving a lot of problems (spikes ...). Hamamatsu Japan kindly agreed to refurbish them (kapton insulation/new active divider) if back to firm before 31/12/2010: after it they say it would be OUR problem
- TOF0 has been refurbished in September 2010 and put back in DSA with newer PMTs (about 20 out of 40) , TOF1 was refurbished in Milano in spring 2011 and put back in DSA in June 2011 Maybe this will solve the pending issue of the little worse resolution (60 ps) as compared to TOF0/TOF2 (~50 ps).



# TOF1 refurbishing



- a MICE note (in preparation) will give details about TOF0/TOF1 refurbishing
- each PMT was fully tested for about 1-2 weeks
- TOF1 mechanics improved

MICE Collaboration

MICE-NOTE-DET-XXX

6 July 2011

## The Refurbishing of MICE TOF0 and TOF1 detectors

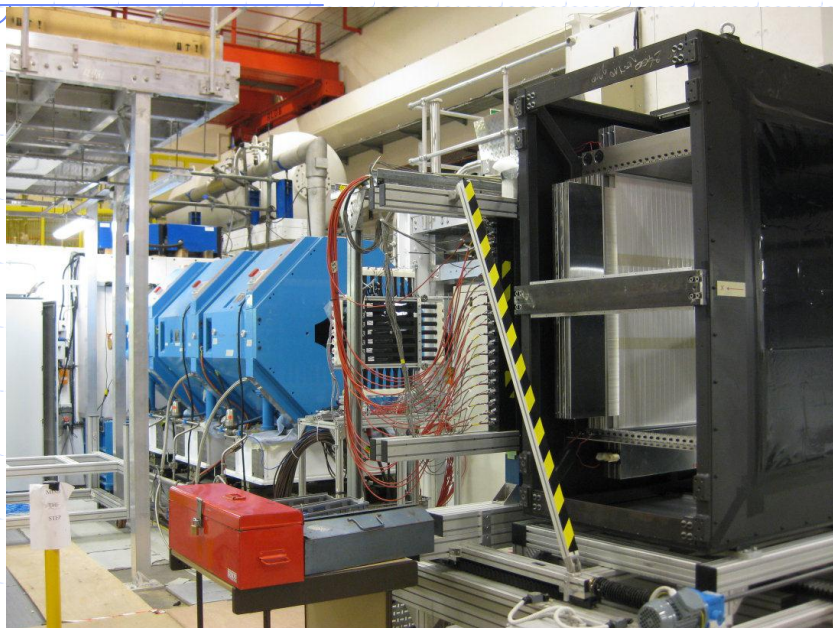
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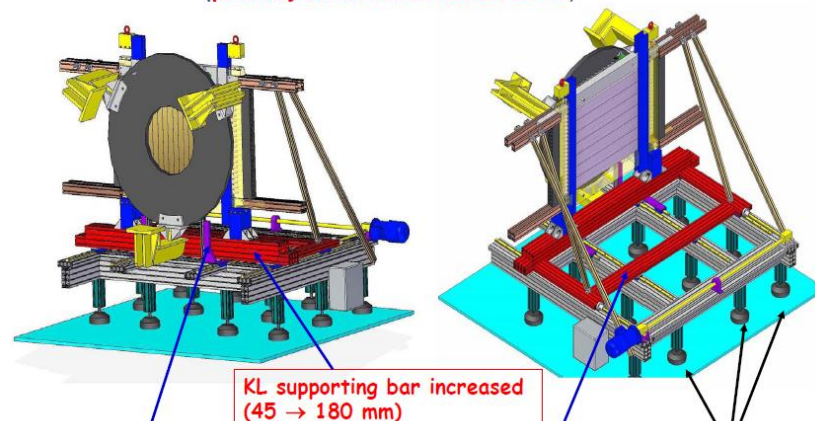
The TOF0 and TOF1 detectors have been refurbished in late 2010 and beginning 2011. Nearly half of the older PMTs have been sent to Hamamatsu, Japan, for refurbishing and changed with newer ones. TOF1 have been completely rebuilt at INFN Milano Bicocca, with improvements to the detector's mechanics. Before mounting, PMTs have been subject to extensive tests to assess their reliability.

# Refurbishing of downstream platform to accommodate EMR



## Downstream PID trolley - Update

(partially done in november 2010)



TOF2 sliding system repositioned

EMR sliding system removed

feet shortened

Ludovico Tortora  
INFN - ROMA TRE

MICE CM29 RAL 15-18 Feb 2011

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1. Two interventions done in April/May by INFN Rm3 +MIB team, after discussions with UniGE people (F.Cadoux)
2. Some issues still pending: a meeting is foreseen at GVA next week and probably a 3<sup>rd</sup> intervention will be needed (~end November)

# The usual TOF performance plots

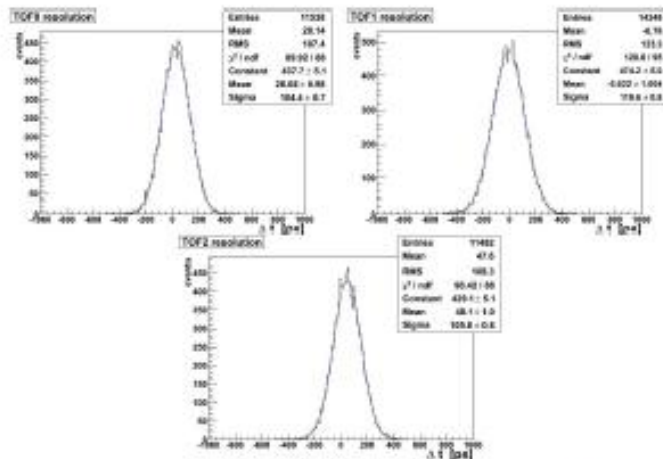


Fig. 9. Time difference  $\Delta t_{xy}$  between vertical and horizontal slabs in TOF0, TOF1 and TOF2. Trigger is on TOF1.



Fig. 10. Time of flight between TOF0 and TOF2 for muon (left) and electron (right) beam.

- Time resolution after calibration:
- TOF0 - 51ps;
- TOF1 - 58ps;
- TOF2 - 52ps.

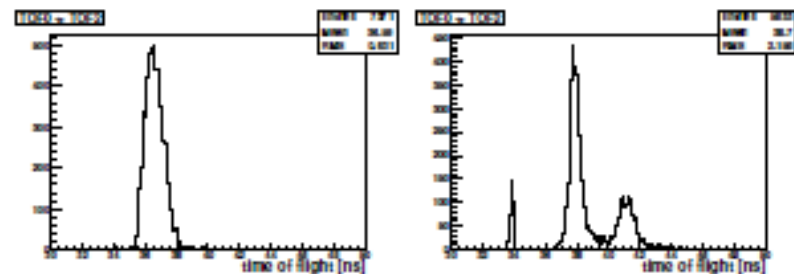
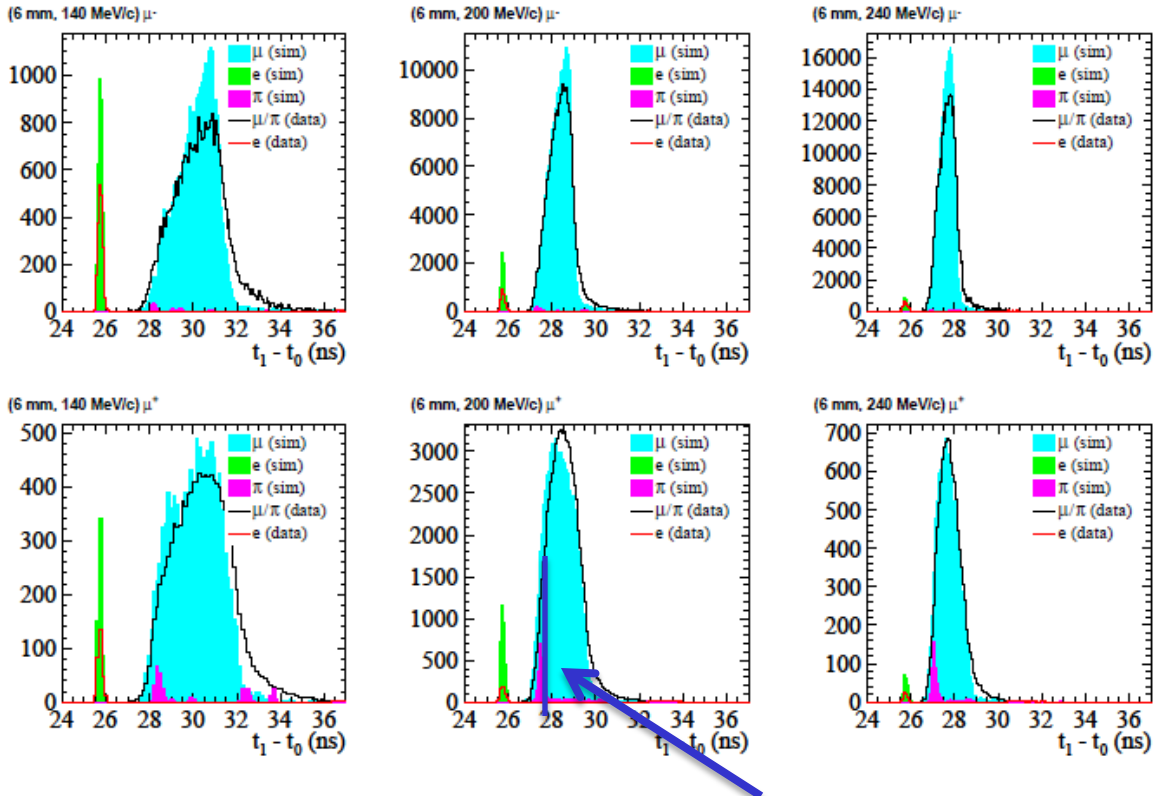


Fig. 11. Time of flight between TOF0 and TOF2 for muon (left) and electron (right) beam.

# A quick remark : the pion contamination is not really an issue



**-ve contamination  
always < 1%**

**If we trust our MC we may have always a  $\pi$  contamination < 1% also in +ve just with a simple TOF cut (clearly losing some signal)**

# TOF Calibrations Needs



1. TOF0, TOF1 have been refurbished in MIB and put back in DSA with new PMTs.
2. => **New calibrations are needed: but it means just some days of data taking together with Cherenkovs (with a few dedicated electron runs)**