

FTM – general meeting

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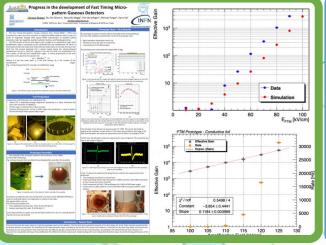
Marcello Maggi

INFN – Bari

29-07-2020











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10x10 FTM Prototype Studies:

Single Layer (Gent) - Multi Layer (Pavia)

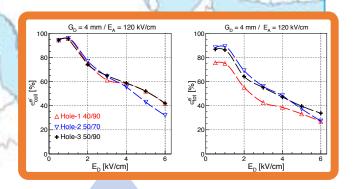


CERN: where FTM was born:
Rui & MPT – First FTM – Archana & Marcello

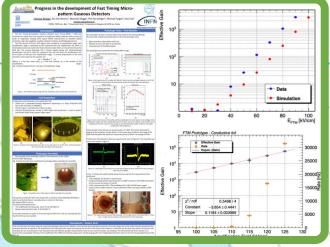
American University of the Middle East



Simulations







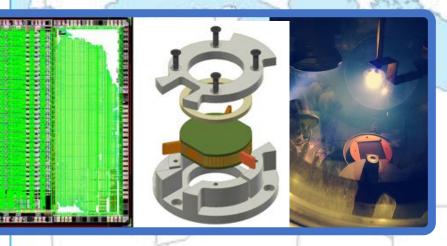




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10x10 FTM Prototype Studies:

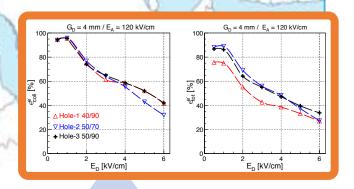
Single Layer (Gent) - Multi Layer (Pavia)



BARI: where fire was kept alive: FATIC (32ch) - small FTM & Laser - DLC Deposition **American University** of the Middle East



Simulations



29/07/20

Overview of the activities - I

Large-size FTM

- 10x10 cm² 256x256 strips X-Y
- Electronics development (FATIC) Bari
- Simulations in Kuwait
- Prototype in Pavia & Gent

Gent

- Single Large Drift ("Eff")
- Metallic Amp ("uRWELL")
- Amptek 22keV Ag X-rays
- Demo'ed validity of Setup
- Demonstrated Gain
- No signals

Pavia

- Old prototype (2017)
- Multiple Small Gaps
- Amptek 22keV Ag X-rays
- α particles (very high E_{dep})
- New: Kapton XC (25um)
- No signals

Kuwait

- Simulation of uRWELL like holes (top hole diam > bot hole diam)
- Several interesting results
- Need to simulate real detecors now (Gent/Pavia)



Bari

- Discussion with Bari electronic engineers
- Ground below strips probably has too high capacity w.r.t. strips
- Signal coupled into ground
- Submission of new FATIC-v2 in 2021

CERN

- Will be back in the play
- Marcello & Student (3M)
- Want new prototype

Overview of the activities - II

Small-size FTM

- 2 cm diameter 2 signal pads (T & B)
- Laser setup to ionize in each gap
- Demonstrate FTM-principle
- Test different DLC productions

Bari

- Small FTM to be instrumented with "domestic DLC"
- Now: results with "USTC DLC"
- Encouraging results, but need new foils for "stability" issues
- DLC production through Ion Beam Deposition
- DLC & Cu Adhesion studies
- Future: study also graphene (AIDA-Innova)

Lecce

- DLC production through Pulsed Laser Deposition
- production of small-scale
- Need to scale up & cover with Cu to test Etching at CERN
- DLC Characterization (resistivity, material quality)

CERN

- Scratch tests to check adhesion Cu to DLC
- Etching of "domestic DLC"
- Requires good adhesion and 5x5cm² foils

Home-made DLC probably difficult to scale-up to large size Allowed for funding in the past years

Collaboration with solid-state scientists to understand DLC Can give guidance to USTC on how to produce better DLC Has put us on the chart of RD51 \rightarrow AIDA-Innova

Today's agenda

- Will limit ourself only to detector tests & detector simulation
- Overview of the activities so far in various sites
 - 15' talk for each site
 - Discussion at the end
- Discuss how to integrate the R&D on the large-size FTM
 - New Readout-boards for Gent & Pavia
 - New Amplification Foils for Pavia
 - New prototype at CERN
 - Kuwait simulating Gent/Pavia/CERN prototypes with correct Geometry
 - If Test-beam opportunity at CERN in 2021
 - Probably GEM-test beam => join this effort!
 - Join with small-FTM (read by Oscilloscope + MCP-PMT)
 & Large-FTM (VFAT2/3 + Turbo OR APV25 + SRS)
 - Test-beam opportunity at CERN in 2022
 - Small-FTM and Large FTM (FATIC-v2 + Mosaic)

Today's discussion

- Scientific Program discussion
 - Which measurements?
 - What time-scale?
 - Who does what?
 - Divide tasks for groups with prototype
 - Simulation task covered by Gent & Kuwait
- Future Funding?

Since this is the main item of this meeting, let's be brief & to-the-point in the next presentations