



Pixel 3D Detectors in Genova

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- Expertise and available facilities
- Field of contribution
- People involved
- Financial resources

In Genova we are involved with the construction of the Pixel Detector

- **Digital Chip Design:** We developed the Module Controller Chip, the digital readout chip that collects data from 16 FE chips and transmits them to the ROD. This is a .25 μm IBM process, using enclosed gates.
- **Hardware & Software development:** During the testing phase of the MCC and the whole Pixel Module we developed many PCB's and software in order to be able to fully qualify the system. We participated actively to many test beams and irradiation campaigns.
- **Bump Bonding:** We contributed in the development of the bump Bonding at ALENIA that is one of the two bump bonding companies, together with IZM, used by the Pixel community.
- **Module and Stave assembly:** We have assembled many modules and staves.

We have access to the following facilities:

- 2 clean rooms, 1 probe station, 1 flip chip machine, 1 automatic wire bonder, 1 mechanical tooling facility, mechanical mounting tools, microscopes etc.

Field of contribution

Due to our expertise we would like to contribute in the following fields:

- Collaborate with IRST in the development of the new detectors.
- Bump bonding of the detectors on the electronics.
- Testing the electrical performance of the new bump bonded devices.
- Run test beams in order to understand the overall performances of the new detectors.
- Irradiation studies of the new devices, once connected to the electronics, in order to fully understand the radiation hardness of the new devices.

People involved

At the moment in Genova we have 4 technicians that worked with us in the development of the Pixel Detector that are willing to contribute with their expertise (mechanical and electrical).

R. Beccherle: I am willing to get involved in the ATLAS upgrade and therefore i would follow in particular the 3D project.

G. Darbo: he will also be involved in the ATLAS upgrade.

P. Morettini, G. Gagliardi, C. Gemme: They are committed in the running of the actual detector but are willing to help us during test beams and irradiation programs.

Financial Resources

- In 2007 INFN does not provide any specific founding to R&D projects related to SLHC / LHC Upgrades:
 - ✓ Nevertheless there are some minor projects, in collaboration with some universities, ongoing that provide some founding.
 - ✓ INFN still provides money for people traveling and /or working at CERN.
- In 2008 there will (hopefully) be resources allocated to R&D programs. For this to happen it is important that the R&D project is included in an "official" ATLAS upgrade program.