
Update on the NA60 Pixel Detector Status

*Johann M. Heuser, SUNY Stony Brook
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- Preparations for the summer 2002 run
 - Status of electronics and detector components
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NA60 Vertex Spectrometer Preparations

- Test run October 2001:**
- cryogenic beam scope commissioned
 - micro strip telescope to replace pixel planes in 2002 run:
2 planes tested, NA60 hybrid + ATLAS sensor
 - data acquisition and detector control system running,
integrated into NA60 online system.
- For May/June 2002 run:**
- build full micro strip telescope, with NA60 sensor from BNL
 - strips readout ready, mechanics finalized early 2002
 - **finalize and test pixel readout chain**
 - **build and integrate 1st small pixel plane**
 - **project and work in cooperation with ALICE**
- More details on pixels
schedule ahead:** after ALICE/NA60 pixel meeting at CERN, 16 January 2002

Pixel Detector Status I

A/ detector components:

- 16 wafers à 86 **readout chips** available to NA60
- tests have yielded expected results so far:
 - ~30% good
 - ~30% OK
 - ~30% bad
- this means: 10 wafers expected to yield ~300 chips, i.e. enough for the full 10-plane pixel telescope and spares:
- need for 88 chips + spares + exchange of 1st plane after some irradiation
- aim at 160–170 good chips for entire 10-plane telescope.
- **bump bonding** at VTT: first results yield ~100% OK
- **detectors:** manufacturer: Canberra (for ALICE)
NA60 might have to use more radiation-hard material long-term

Pixel Detector Status II

B/ readout components:

- 1) pixel detectors on **Ceramic Chip Carrier** (Al_2O_3)
→ 16 ceramics available at CERN early January 2002 (now!!)

- 2) chip carrier mounted on **Adapter Card**:
→ power supplies, biases, readout interface, JTAG controls (presently external input via VME system)

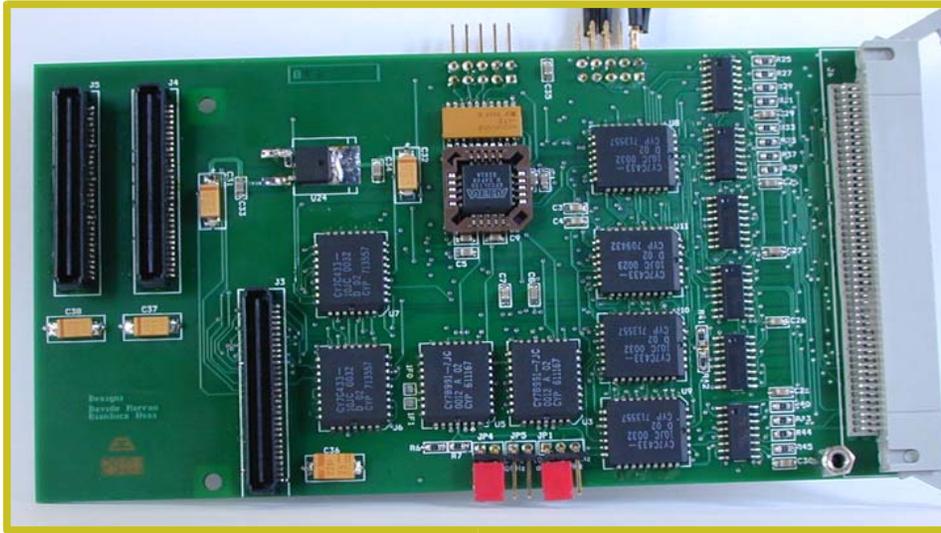
----- **cables** to PC in save distance outside beam area. Max. 1.5 m.

- 3) **Pixel Readout Board**: → zero suppression, encoding, FIFO memory
mounted on:
- 4) **CERN PCI card** → readout with LINUX PC

Pixel Detector Status III

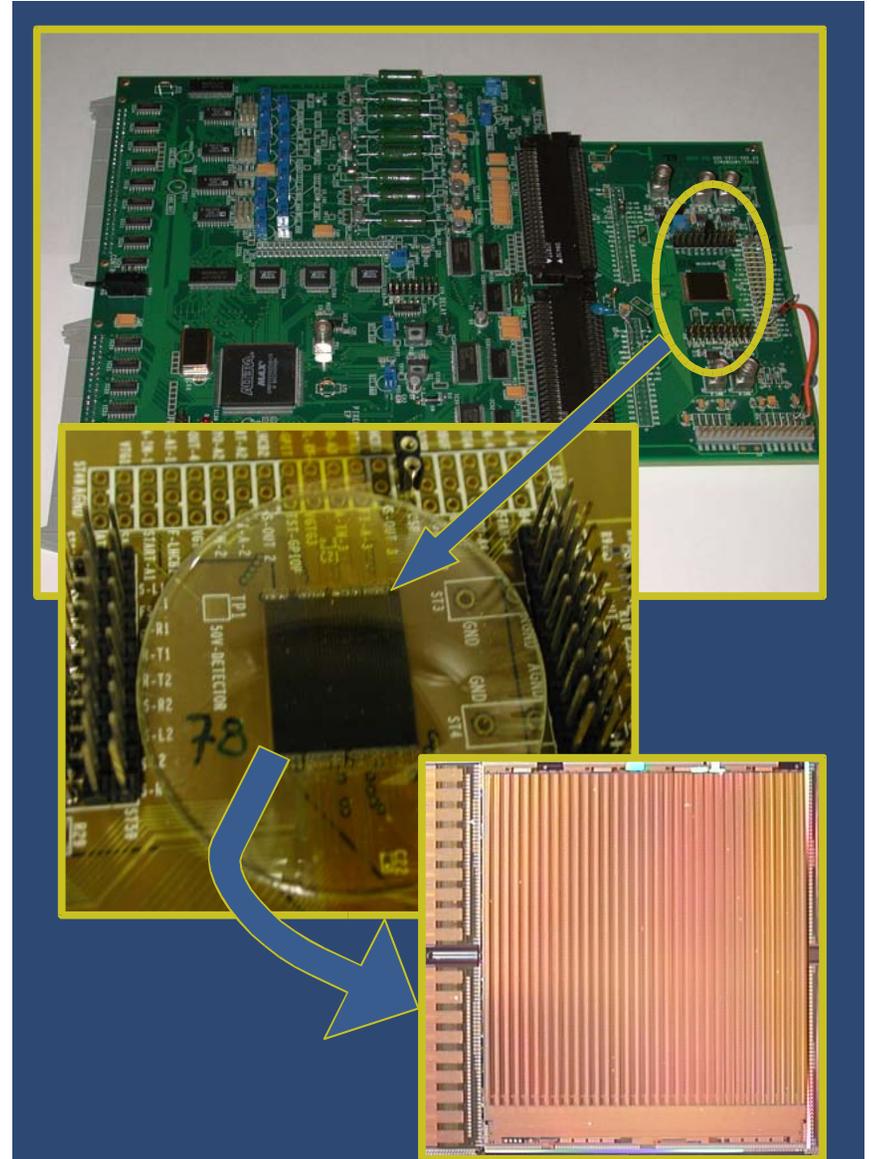
- readout currently reviewed:
 - rad-hard ALICE "pilot" front-end control chip now available; redesigned+ simplified adapter card eliminates need for external JTAG controller and VME.
 - introduce GLinks between adapter card and readout board:
 - 1 high-speed link: data
 - 1 low-speed link: commands, trigger, JTAG
 - eliminate cable length issue – better suited for NA60 hall.
 - benefits a reduced total number of readout cards, read 2 small planes with one pilot-card.
 - availability: Chip carrier and Readout Board available early January 2002. Full chain ready/tested early February.
 - from Febr. 2002:
 - subsequently build NA60 pixel planes until Fall 2002
 - starting with one small 4-chip plane for the Summer run,
 - then continue with large planes.
- Biggest problem for pixel team: extremely short time to design and assemble all the pieces.

Pixel Telescope Readout Components



Pixel Readout Board

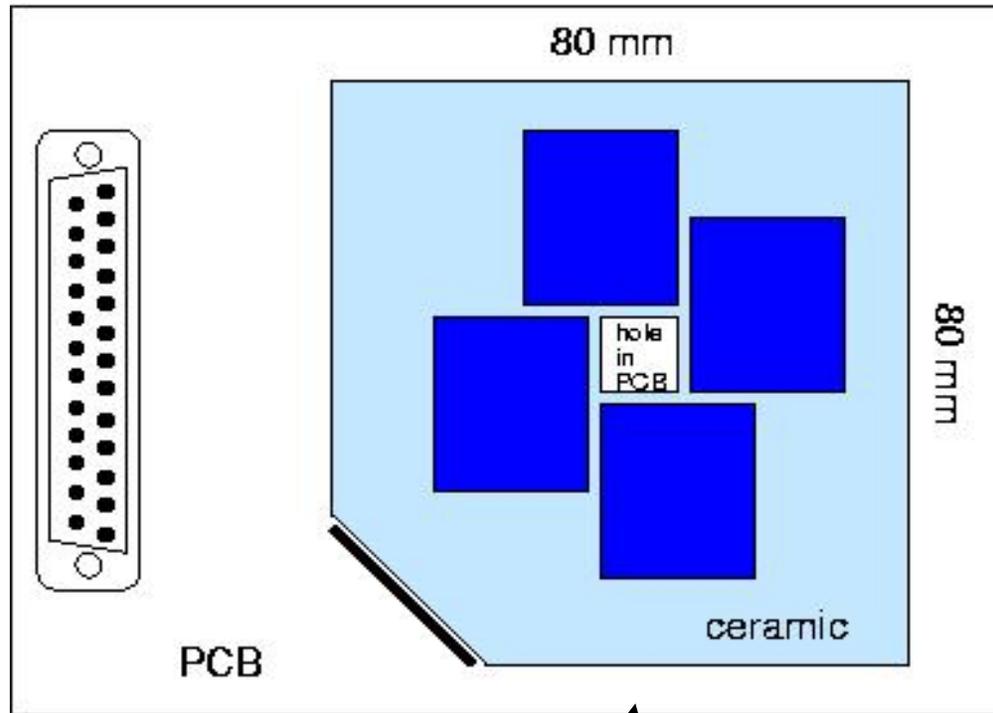
PCI Card with Pixel Readout Board



Adapter Card (top left) with pixel chip test carrier (top right). Zoom into pixel chip area.

Ceramic Chip Carrier and PCB Mount

to Adapter Card
←



Chip Carrier
for small pixel
planes X/Y,
on PBC mount

(not to scale)

