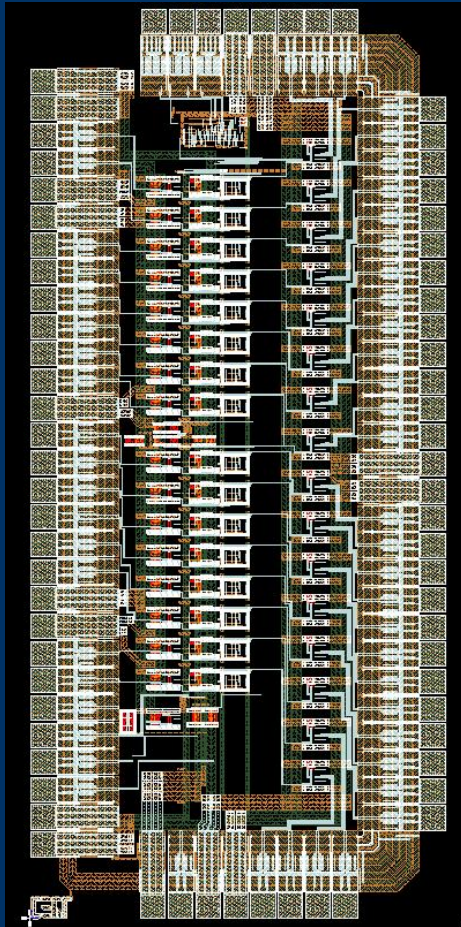




Experience with multi-channel integrated frontend electronics

Christian Hervé

(gas filled) strip detector frontend



- 16 channel preamp. + discr.
- 0.35 SiGe from AMS (Graaz) / MPW from CMP (Grenoble)
- Bipolar is fast at low current consumption
- Noise budget in favor of Bipolar for short T_{peak}
- Proved to be spark resistant

Main issues

- Noise/signal ratio (**detector capacitance!**)
- DC or AC coupling?
- Analog crosstalk
- Feedback from discr. out to analog in.
- Mixed analog/digital layout (tools)
- Minimize iterations (typ. 6 months for resubmitting)

ASIC alone is nothing...

- Complete front end
- 128 channels / 10 cm width
- Digital preprocessing (1st FPGA)
- 2Gb/s optical link (2nd FPGA)
- Shielding, grounding again...
- 12 layers PCB, buried vias
- Test software is complex
- front&back-end FPGA downloading
- multichannel configuration...
- **Team work**

Detector physics

Mechanics

HV

analog & digital electronics

software

