

Technical report

# LumiCal : sensors

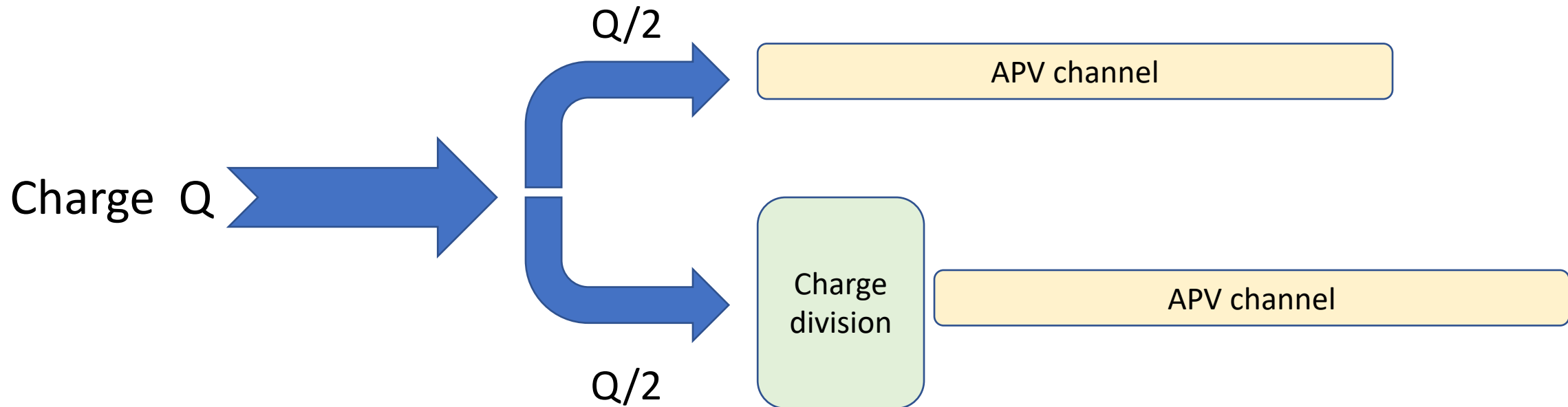
- Tungsten planes : 25 plates sent to CERN
- Silicon sensors : at TAU. TAU purchased from CERN (Eva, Konrad) switch card to test a full sensor at once. Eva will be at TAU by the end of this month
- Detectors :
  - Carbon fiber structure : production started at CERN (Konrad). First prototype within the specified values
  - Kapton and HV fanout : need to be produced. No major changes expected.

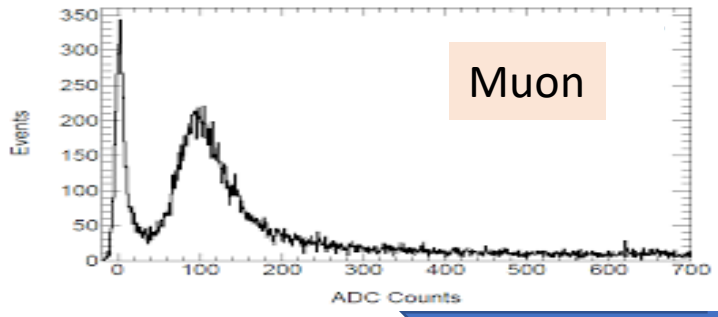
# LumiCal : readout main stream

- Flame : version 0 is fully functional. 01-02/2019 : final design.
- Deserializer : data processor ok; GbE transmission to finish

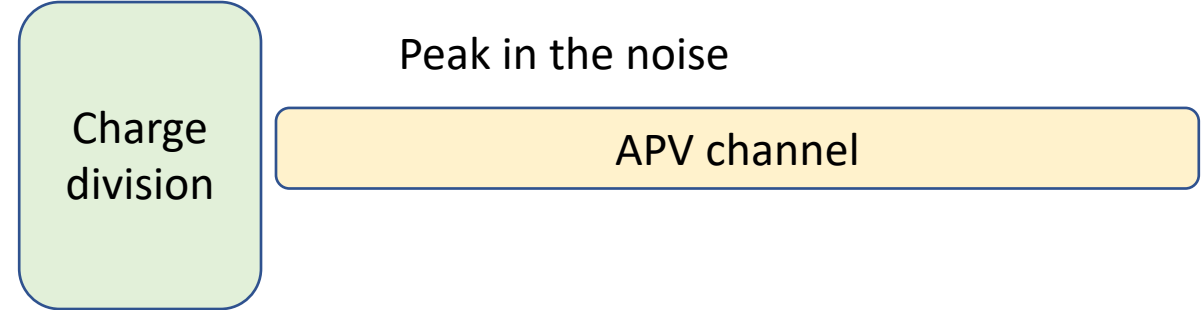
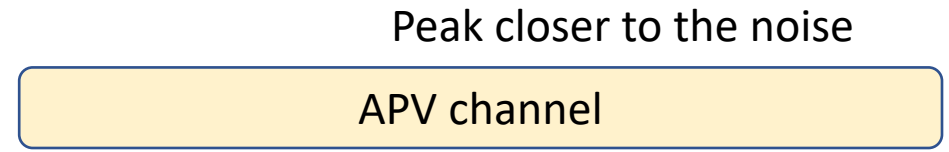
# LumiCal : plan B

- Use of the APV (same as for 2016). Pb : saturated at  $\sim 8$  MIP.
- 2016 TB : charge division. Pb : muon/tail of the shower are not measurable
- Idea : split the signal charge on two APV channels





Charge  $Q$

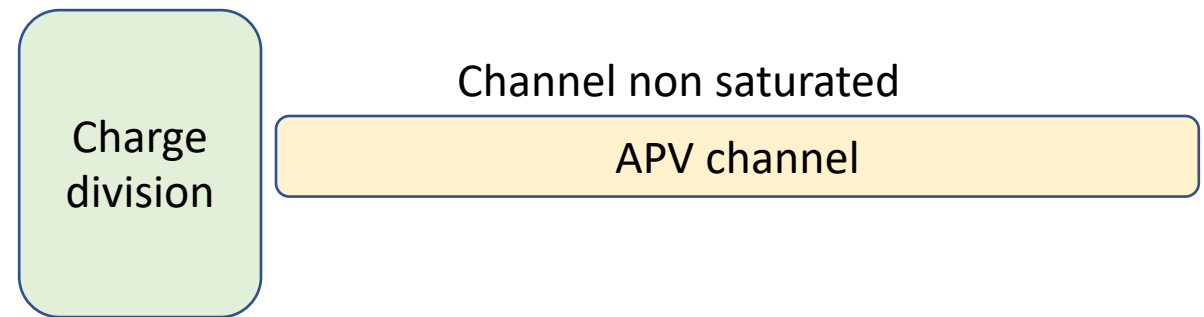
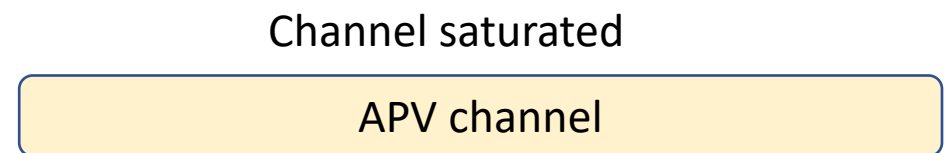


Electron shower

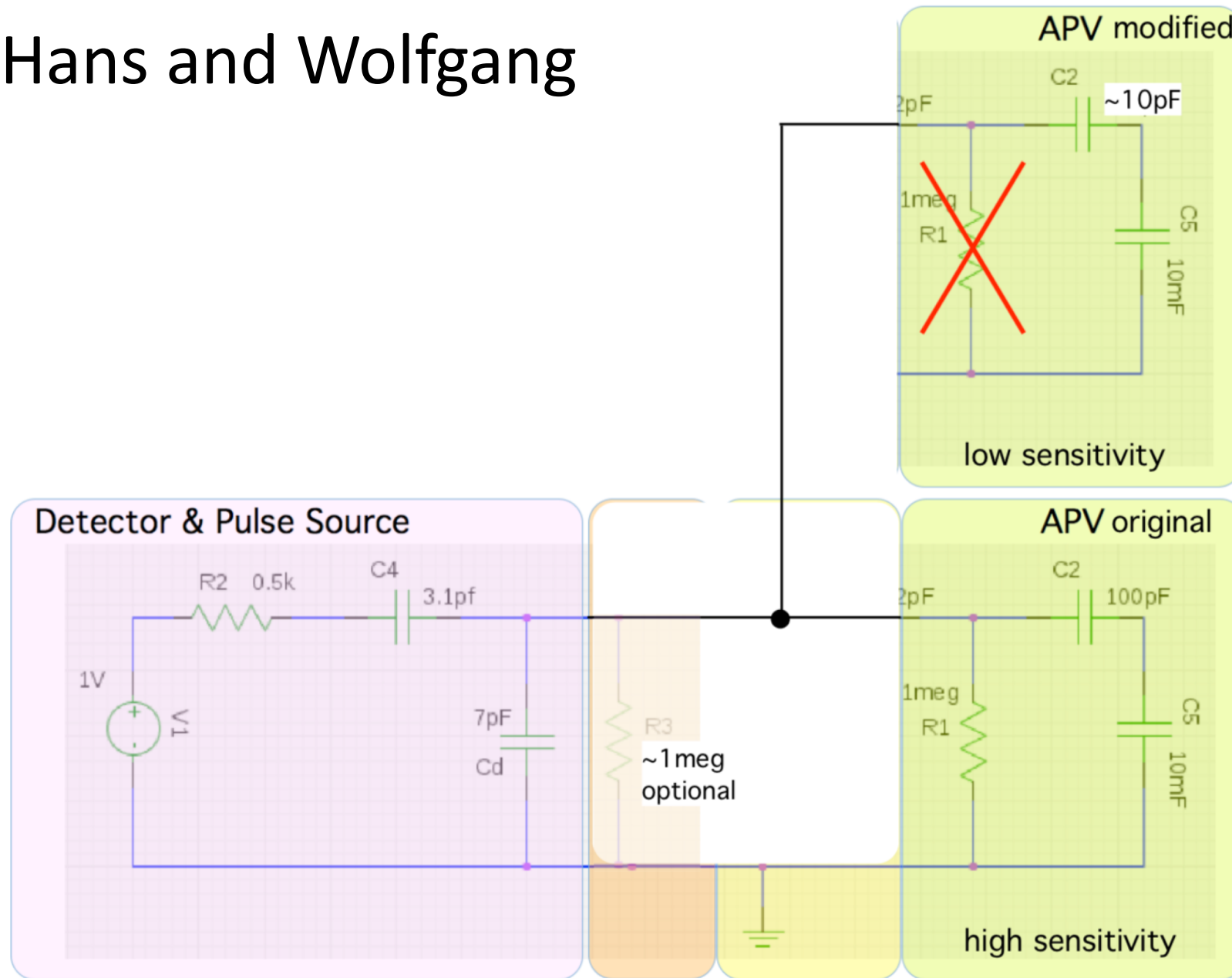
Charge  $Q$

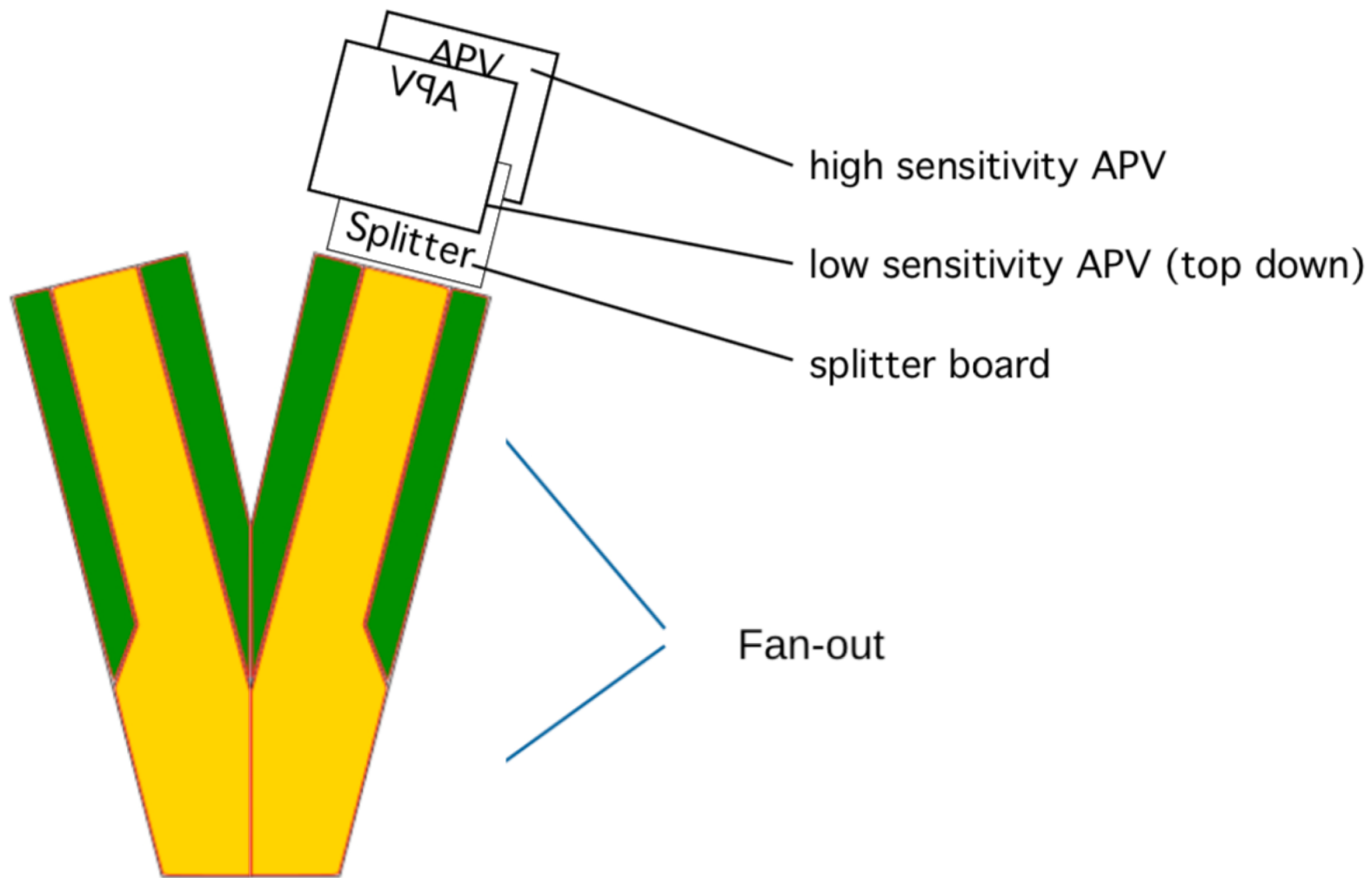


(40 MIPs for example)

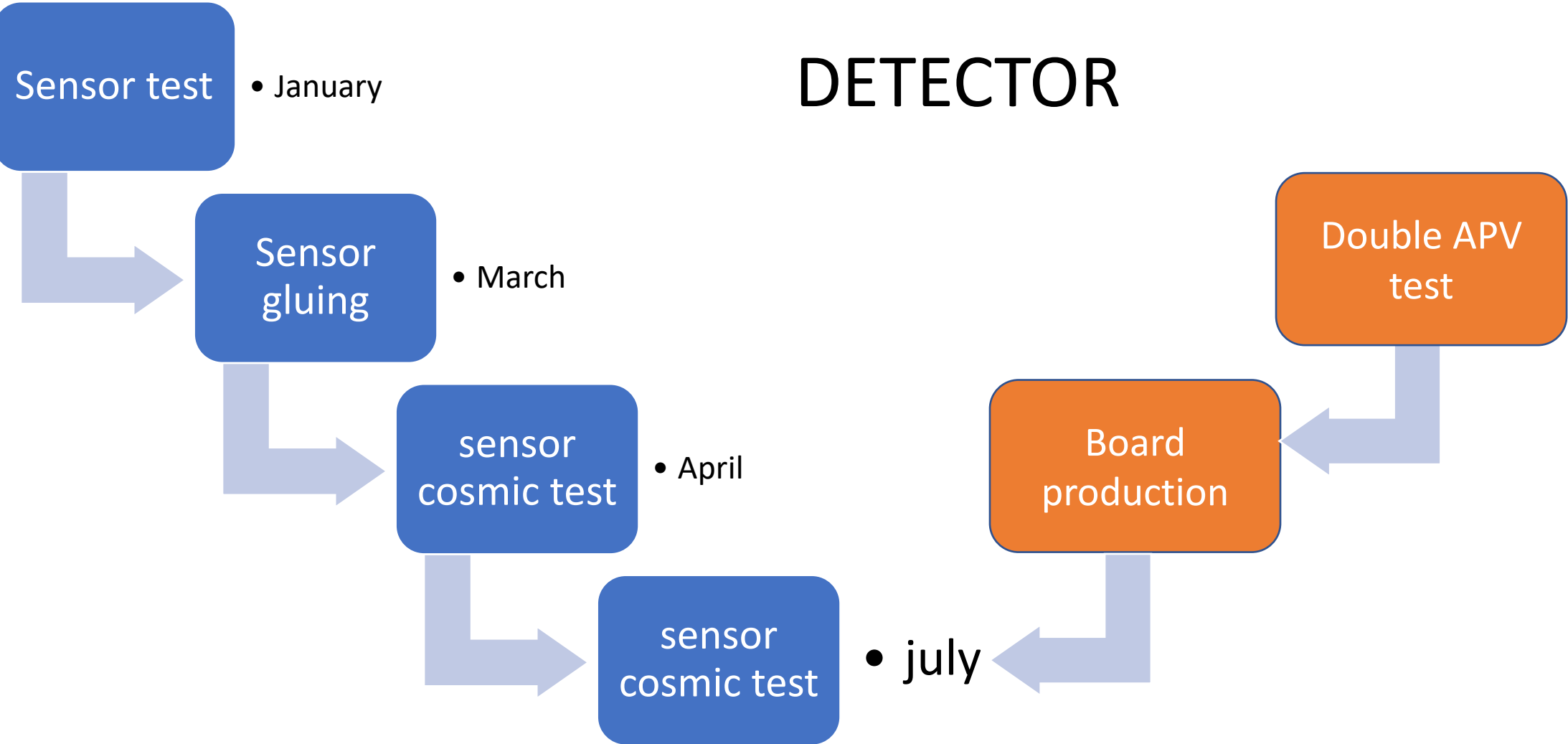


# Thanks to Hans and Wolfgang



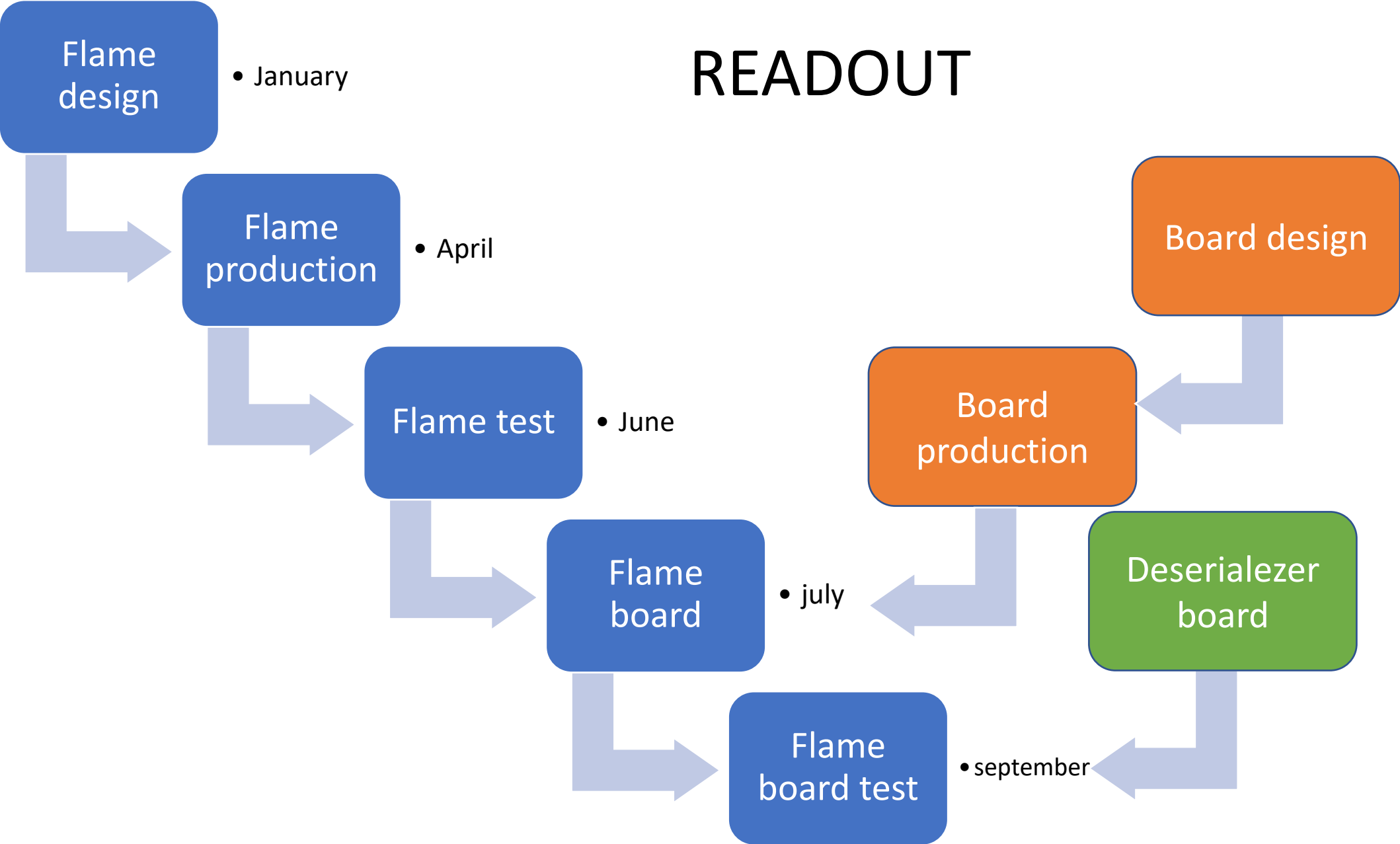


# DETECTOR





# READOUT



Flame design

• January

Flame production

• April

Flame test

• June

Flame board

• July

Flame board test

• September

Board design

Board production

Deserialer board

# Test beam end 2019

- To be done :

- Create frames
- Install tungsten into frames
- Test the sensors
- Build the detectors
- Produce the new readout chip
- Produce the boards
- Test the boards
- Integrate with detectors



## Problems :

- Mechanic of the system ? FPGA in the box ?
- Connection FEB to detectors
- How synchronize the two DAQs ?
- Cooling of the box ?
- DAQ ?
- Online monitoring tools ?