"Monitoring chamber simulation and analysis-update"

I. Margjeka, N. De Filippis, R. Aly, W. Elmetenawee

Università, Politecnico and INFN of Bari

F. Cuna, A.Corvaglia, G.Chiarello, F.Grancagnolo, M.Manta,

A.Miccoli , M.Panareo, G.F.Tassielli

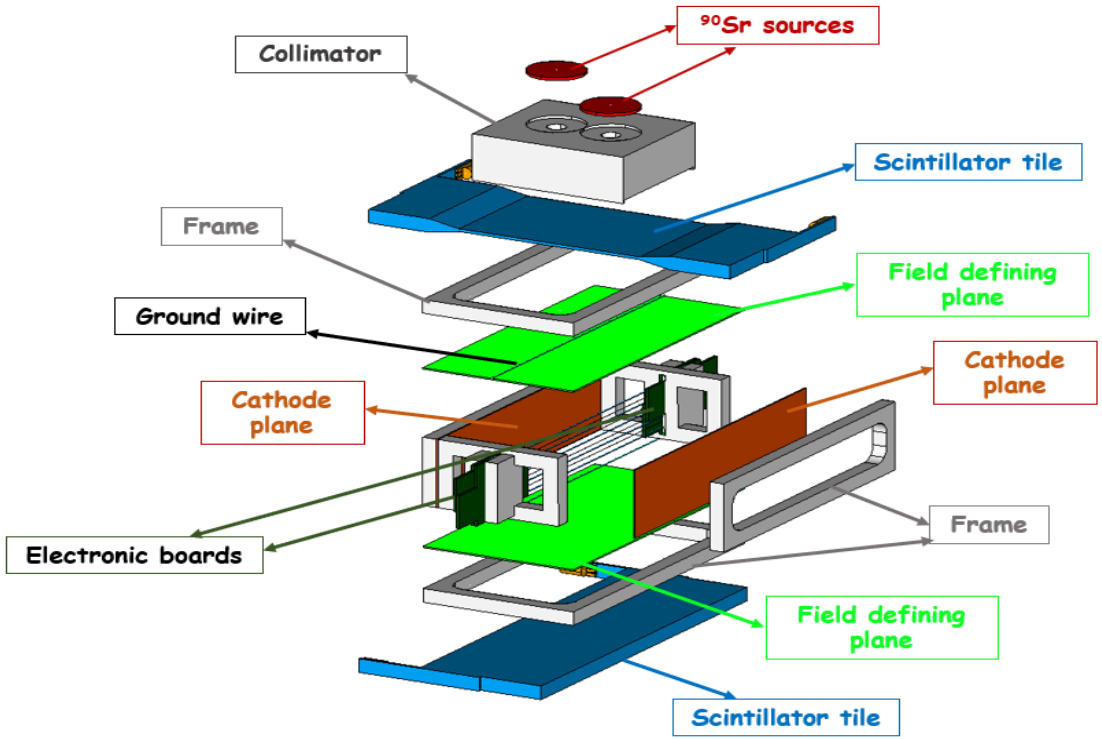
Universitá del Salento, INFN, Lecce

Contents

•Update of the mechanical design.
•After changing the value of guard wires from 120 μm to 80 μm, it was necessary to perform again the simulation:

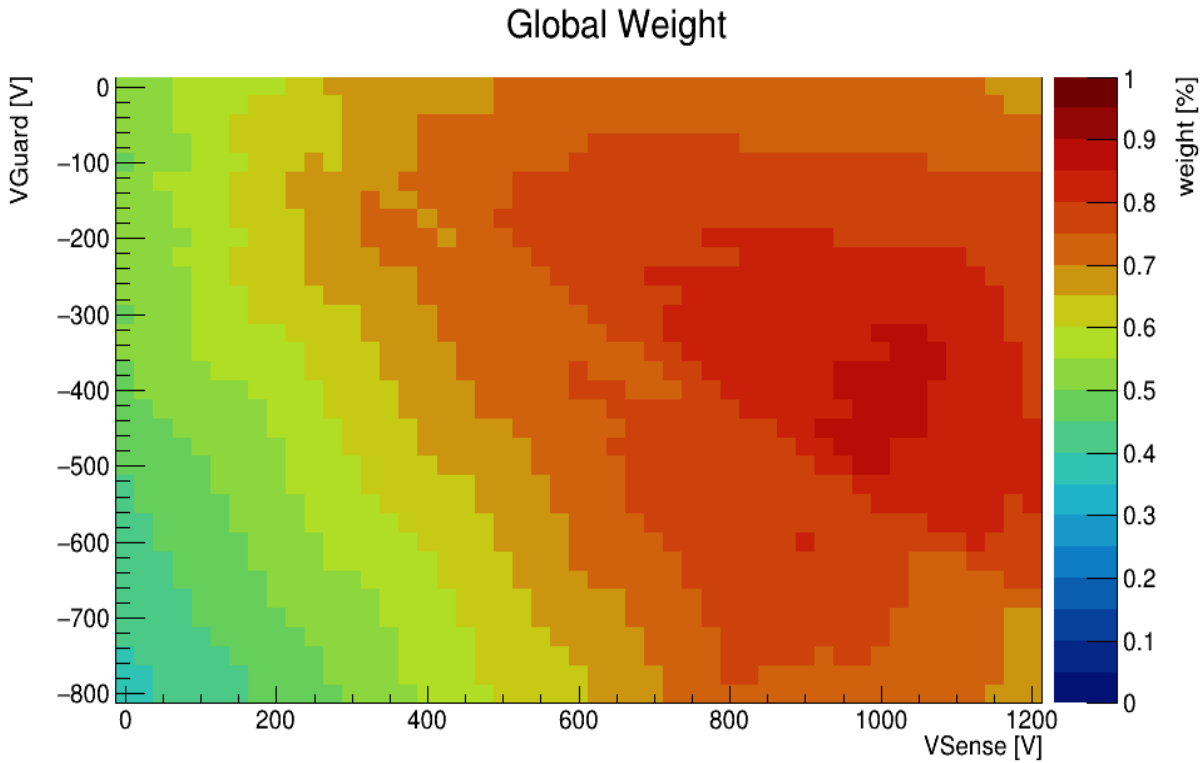
- We search for the new voltage values of sense and guard wires that ensure the high and uniform electric field in the two drift cells.
- We control the possible amplification on guard wires.

Mechanical design



- Lateral cathode walls: thin (190 μm) Cu coated PET foil, glued to a rigid frame to preserve planarity.
- Up and down: resistive 25 μm DLC foil, with an electrical resistivity around 100 $M\Omega\ m$, connected at the edges to the high voltage lateral cathode walls and with a longitudinal wire in the middle, connected to ground.
- Along the plane separating the two drift cells: four sense wires (20 μm diameter gold plated tungsten) alternated to five guard wires (80 μm diameter silver plated aluminum).

Global weight histogram

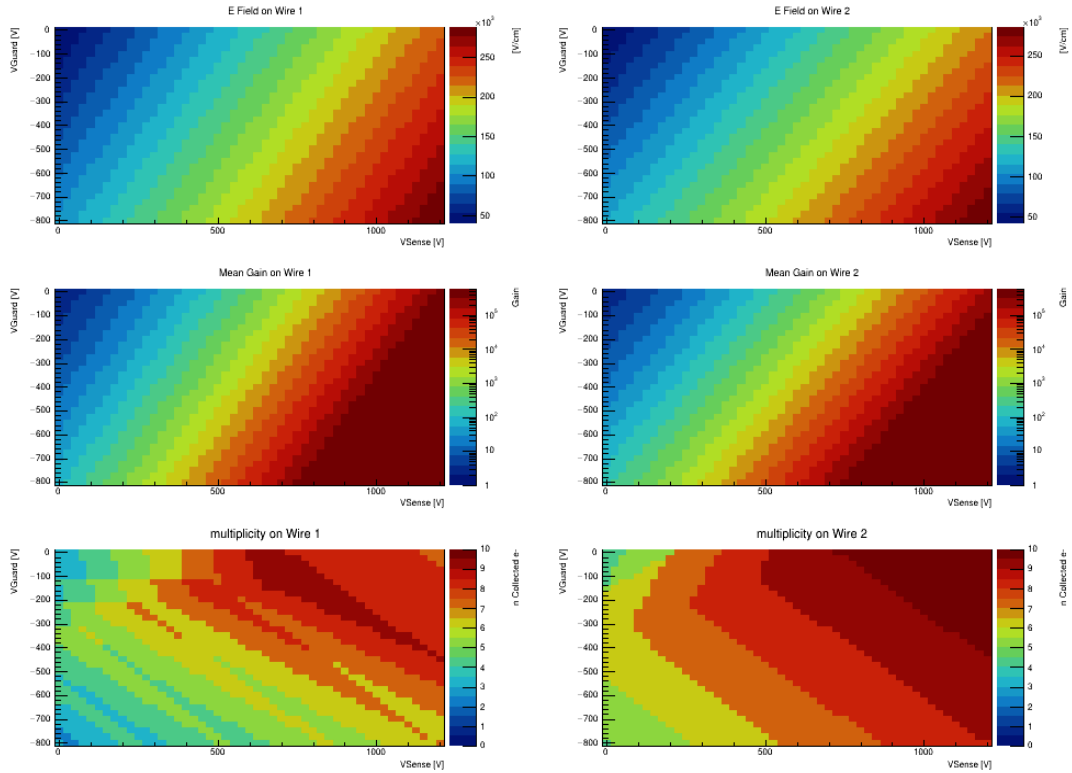


The voltage values of sense and guard wires for a uniform electric field inside the drift cells are:

- $V_s = 1000V$
- $V_g = -425V$

Gain and electric field on the two sense wires in analysis

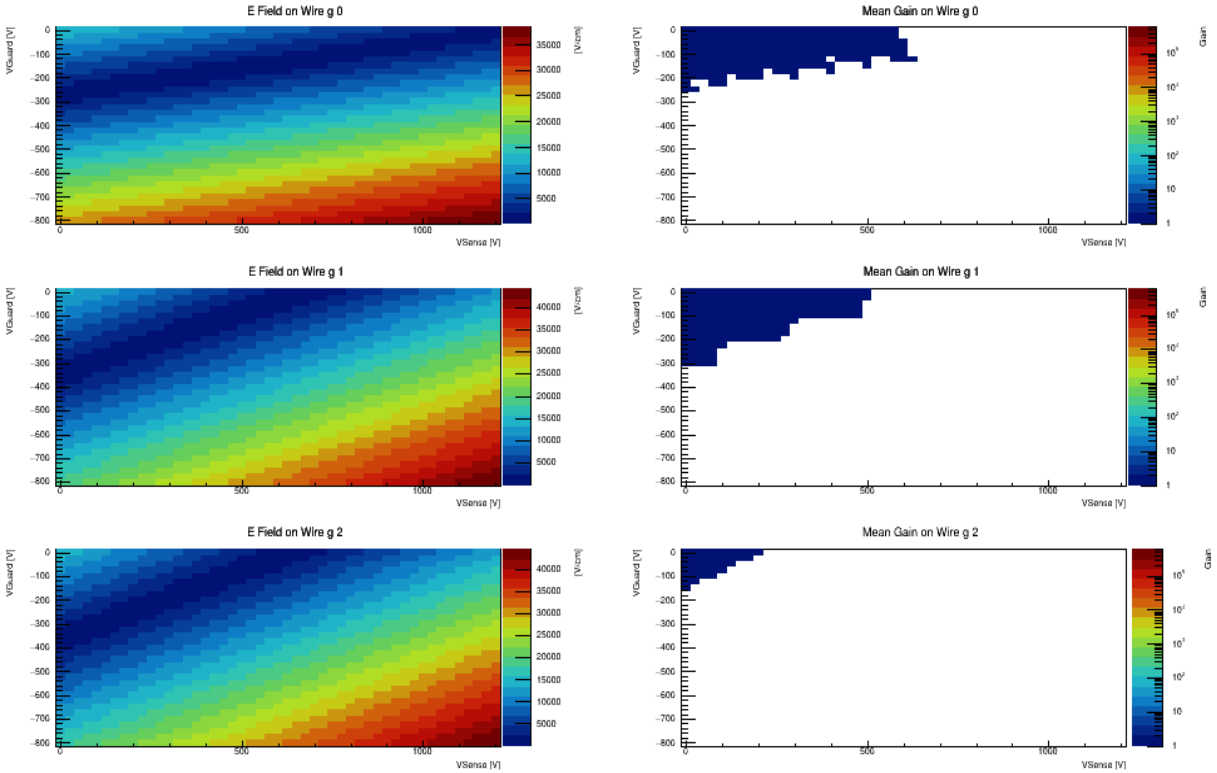
We check the value of electric field and gain on the two sense wires in analysis.



- First sense wire:
  - Electric field = 227.21 kV/cm
  - Gain = 5.42×10^5
- Second sense wire:
  - Electric field = 250.40 kV/cm
  - Gain = 3.88×10^5

Gain and electric field on the three guard wires in analysis

We check the value of electric field and gain on the three guard wires in analysis to be sure that no amplification will occur.



- First guard wire (at y=0 cm and x=0 cm): • Electric field = 18.08 kV/cm • Gain value = 0
- Second guard wire (at y=0.4 cm and x=0 cm) • Electric field = 24.43 kV/cm • Gain value = 0
- Third guard wire (at y=0.8 cm and x=0 cm) • Electric field = 25.04 kV/cm • Gain value = 0