

Simulation of temperature gradient in Linear Collider TPC

Deb Sankar Bhattacharya

PhD student SINP, Kolkata & CEA Saclay

WP meeting

5 Feb 2015, CEA, Saclay

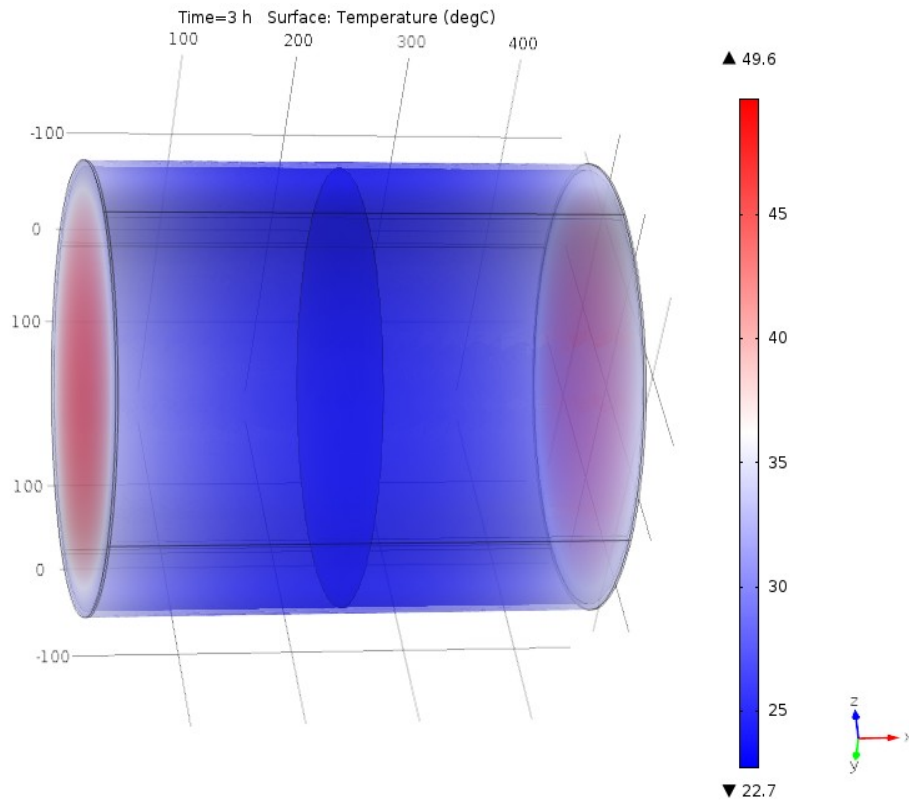


Details of the simulated LP-TPC

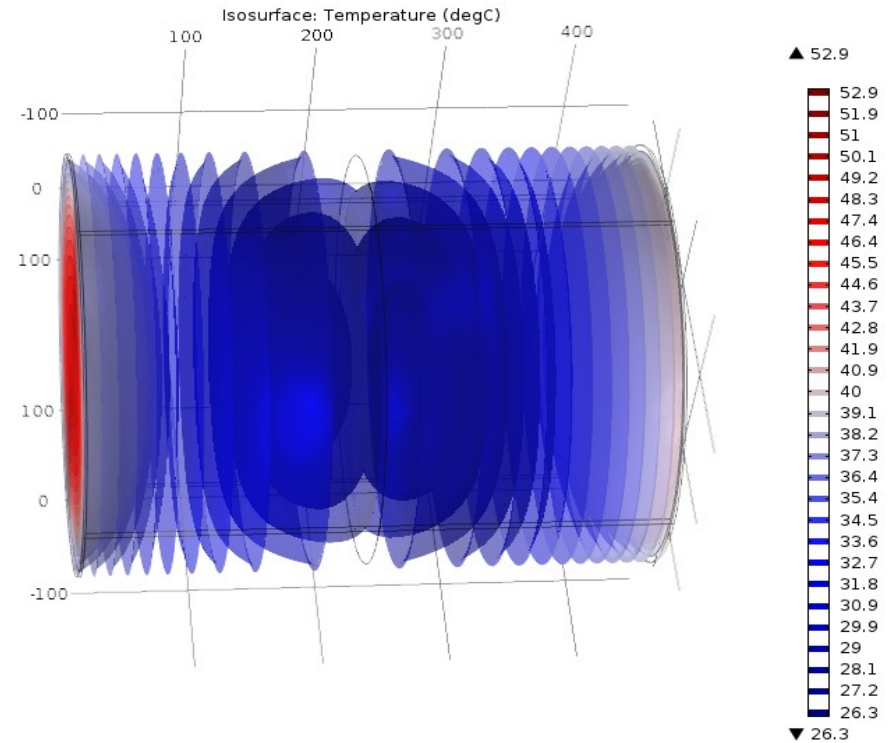
Preliminary results

Length = 4.6 meter
Diameter = 3.6 meter
Common cathode dividing the gas volume in two equal parts
Each end plate dissipating power of the order of 5.5 K Watt

After 3 hrs



After 7 hrs



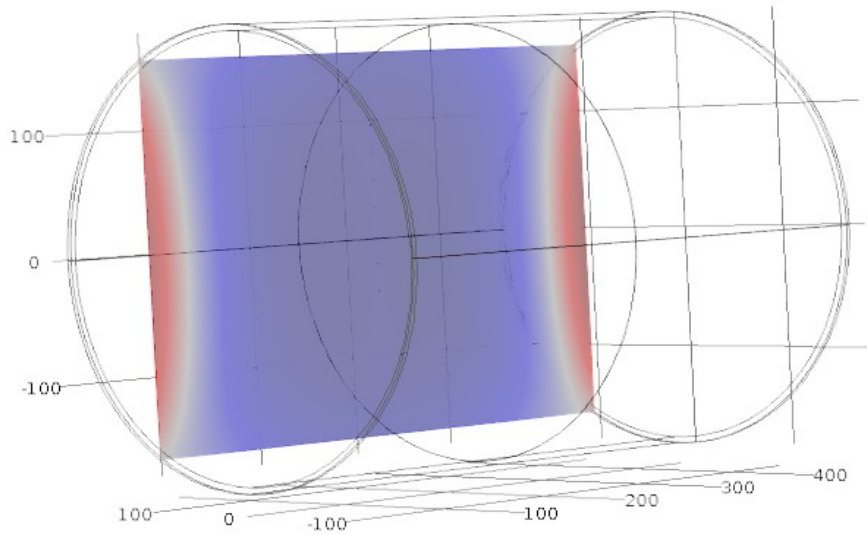
Temperature distribution in Z-X plane

Preliminary results

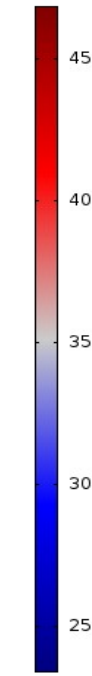
At, $r = 90$ cm

At, $r = 0$ cm

Time=4 h Surface: Temperature (degC)

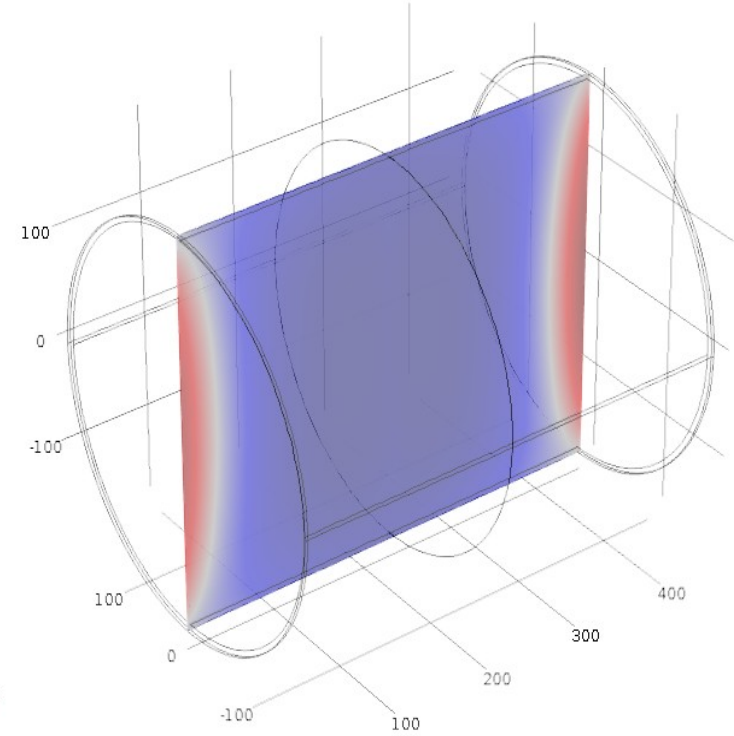


▲ 46.8

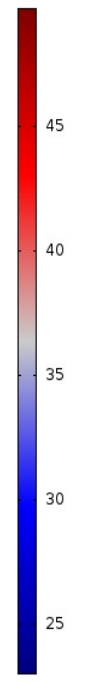


▼ 23.4

Time=4 h Surface: Temperature (degC)



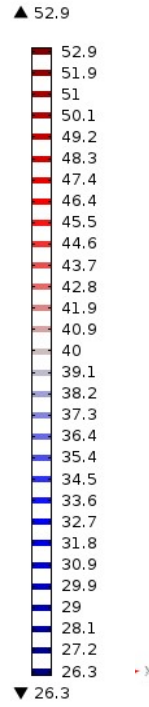
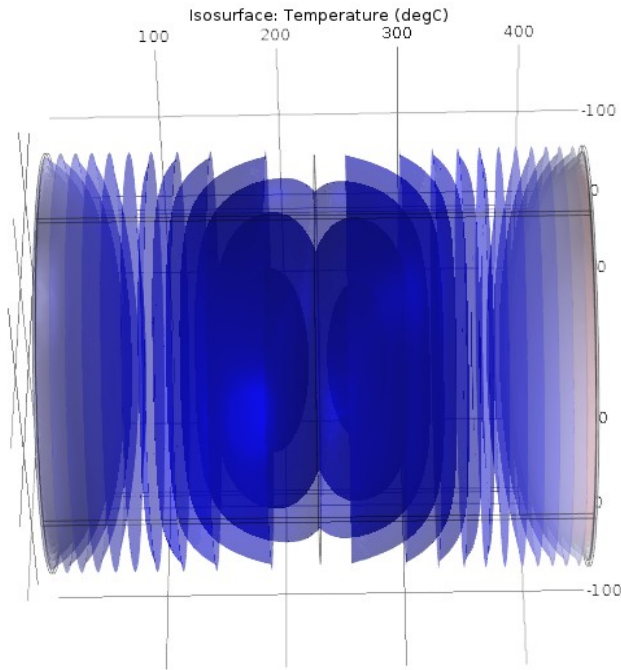
▲ 49.7



▼ 23

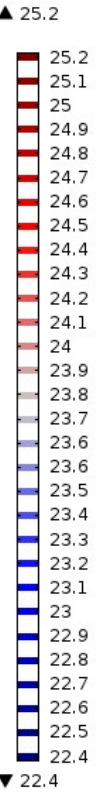
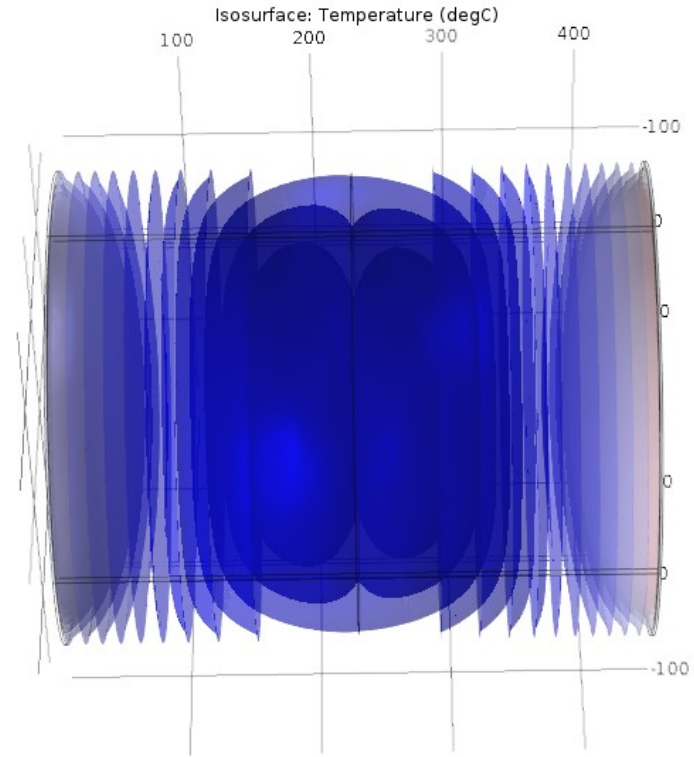
After 7 hrs

Full power consumption



If power consumption is reduced by 10 %

preliminary results



Drift Velocity vs Temperature (in T2K gas for 300 volt/cm)

