

# Some comments

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# Resistivity of protection layer

- **We don't know for sure; it seems (far) too high**
  - From Fred's water probe measurements:  $\rho \sim 0.7 \cdot 10^{11} \Omega\text{m}$   
(comparable to values in Stergios' thesis)
  - Yevgen in e-mail mentions much smaller values
    - Have been checked by Harry, but still waiting for values
  - Fred's probe measurements seem incompatible with current measurements in last year's Bonn test beam: 1 nA @  $V_{\text{grid}} = -300 \text{ V}$  and 3 nA @ -330 V
    - **3 nA from probe measurements would mean voltage drop of 170 (!) volts over protection layer**

# T2K versus Ar-iC<sub>4</sub>H<sub>10</sub> (82/18)

- No (?) micro discharges seen in past 5 years of T2K usage with Gridpix in test beams at DESY ( 2 Timepix1-Octopuces (2014) and 160 Timepix1 (20 Octoboards from Bonn 2015) and(?) at ELSA (single and quad Timepix3 (2017, 2018)).
- Ar-iC<sub>4</sub>H<sub>10</sub> (82/18): NO WAY
  - Is FLAMMABLE (will not be allowed to use in underground areas)
  - Gas NOT SATURATED, i.e. no working point at plateau of drift velocity at reasonable drift voltage; would require quite high drift voltage
  - Mixture has smaller  $\omega\tau$  values; so diffusion larger at  $B \sim 4T$  than T2K
  - LOWER drift velocity than T2K
  - Needs HIGHER grid voltages (should always try to keep them as low as possible)
  - Should avoid large hydro-carbon components (iC<sub>4</sub>H<sub>10</sub>) as increased neutron backgrounds in TPC