Classical Aging - Short Summary - Part 2-

General Comment(s):

- New: Aging issues now become relevant for Muon detectors

Specifics:

- expected accumulated doses per year
  - 200 mC/cm HERA-B
  - 50-60 mC/cm ATLAS, LHCb
  - 8-10 mC/cm CMS
  - 12-60 mC/cm COMPASS (depends on gain used)
- lessons (I)
  - aging rate depends on (ATLAS, HERA-B)
    - collected charge
    - area of irradiation
    - mode of operation (high vs. low irradiation rate)
    - laboratory tests may not be enough!

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- lessons (II)
  - Ar-CF_4- CO_2 based mixtures can be safe exceeding 13,000 mC/cm (ATLAS)
  - Ar-CO_2 (30:70) mixture shows strong aging already after 250 mC/cm (CMS)
  - Ar-CO_2 (93:7) mixture o.k. up to 600 mC/cm (ATLAS)
  - anode aging (gain loss) and Malter effect after 100 mC/cm for Ar-CH_4 (COMPASS)

- lessons (III)
  - aging depends on many more things than collected charge
  - extrapolation test setup $\rightarrow$ real device tricky!
  - $\Rightarrow$ Try to cover as much of parameter space as possible with tests, tests, tests!