# Status of the DIRAC trigger

PSh  Mu

Arm 1

DC   VH   HH

ChN

1

ChA

K⁺

15

ChF

20

20

15

1

π⁻
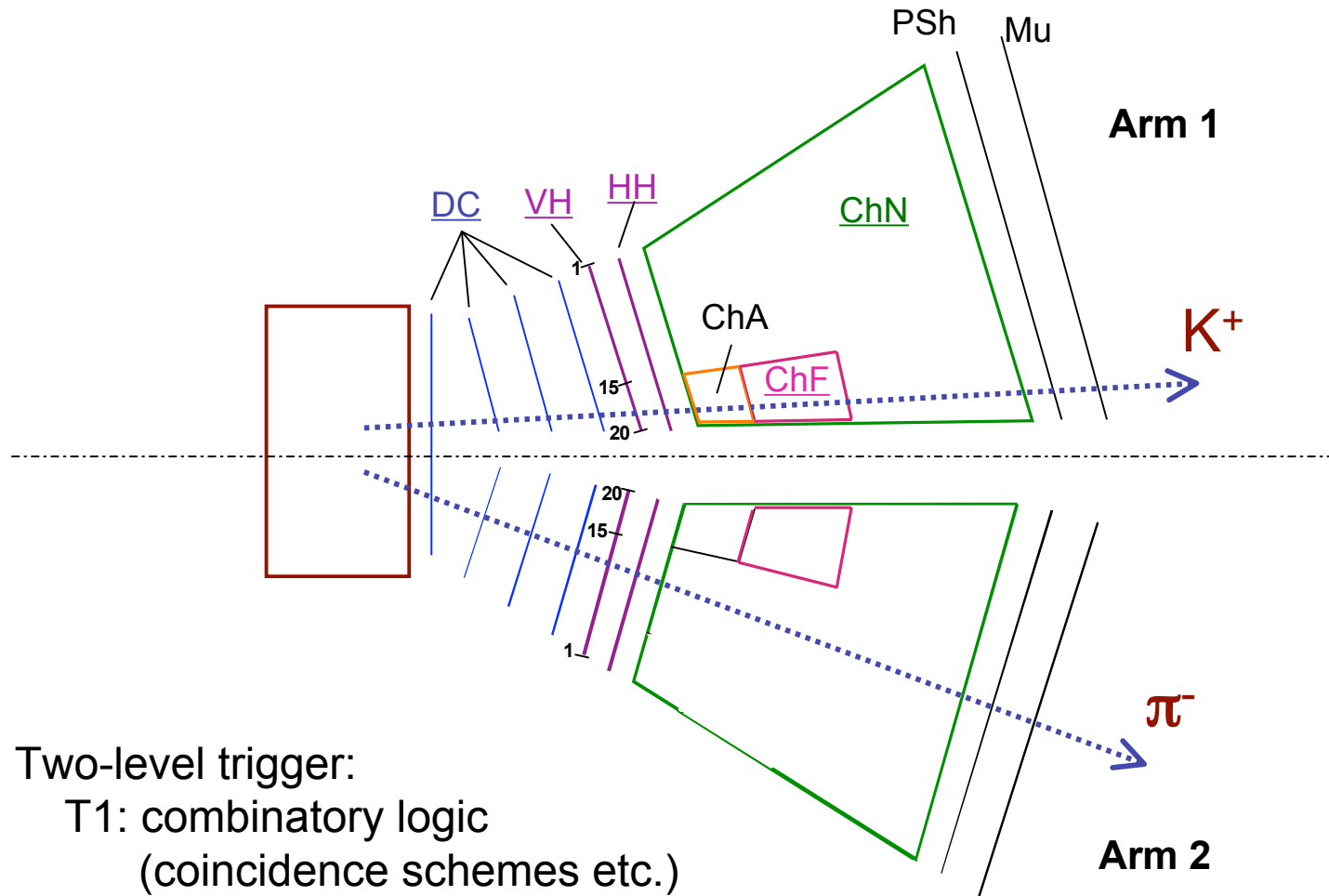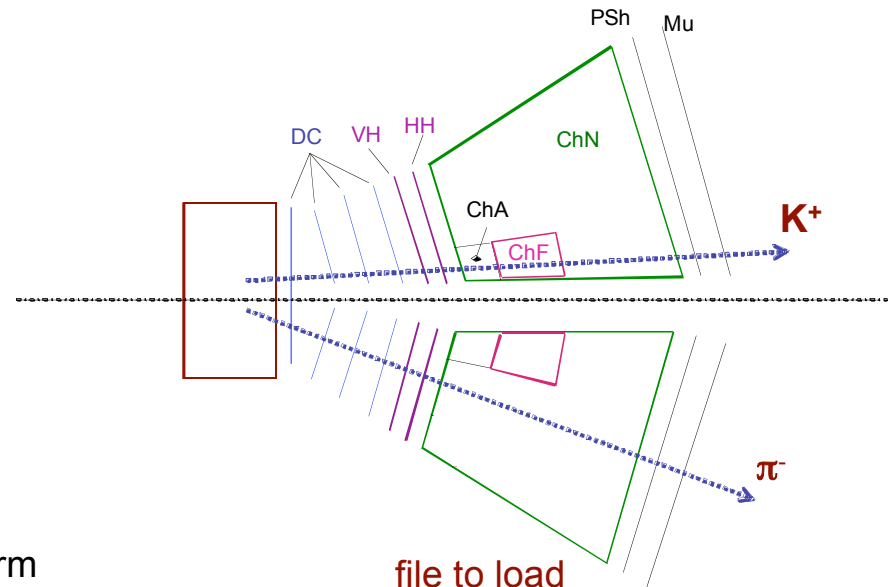
Arm 2

Two-level trigger:
   T1: combinatory logic
      (coincidence schemes etc.)
   T4: drift chamber processor:
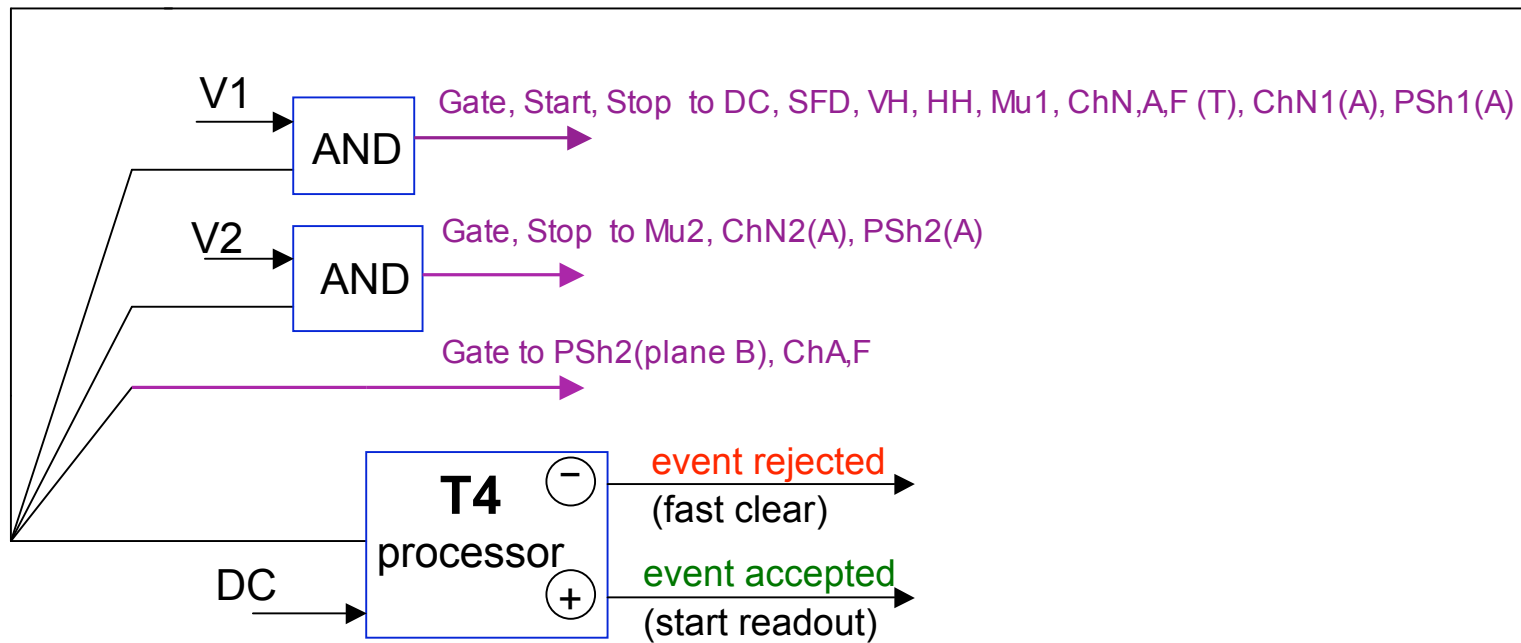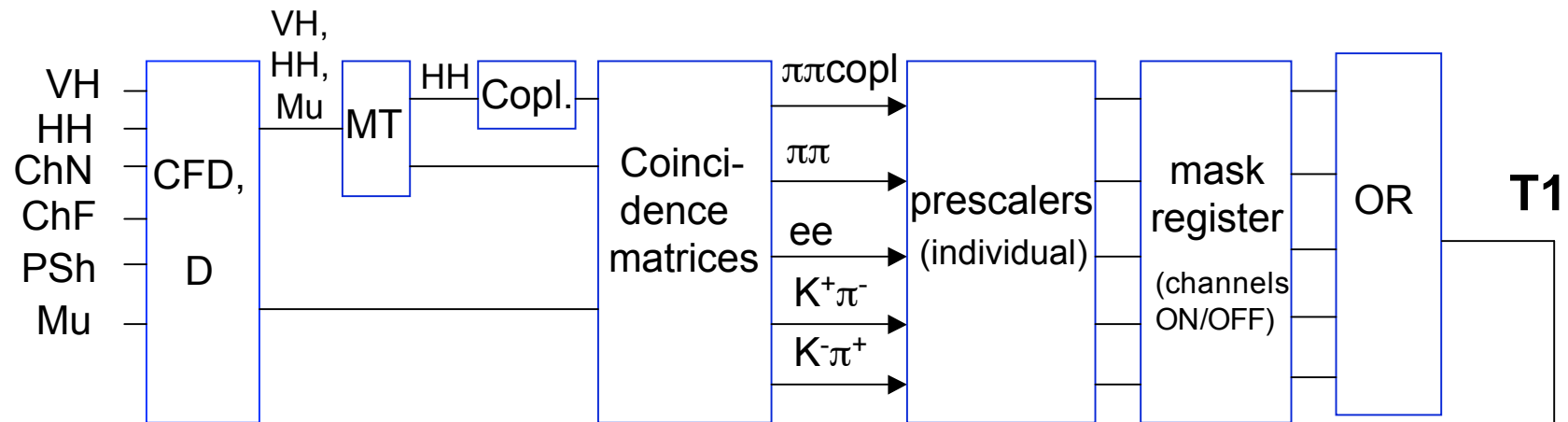       two track finders and track analyser

Available triggers:

|  | left arm | right arm | file to load |
|---|---|---|---|

**"old"**

$\pi^+\pi^-$     $(VH1*HH1*\overline{ChN1})*(VH2*HH2*\overline{ChN2})$     **t1pipi.lst**

$\pi^+\pi^-$ copl    $(VH1*HH1*\overline{ChN1})*(VH2*HH2*\overline{ChN2})*Copl$     **t1pipicopl.lst**

$e^+e^-$      $(VH1*HH1*ChN1)*(VH2*HH2*ChN2)$     **t1ee.lst**

$\pi\pi$ atomic   $(VH1*HH1*\overline{ChN1})*(VH2*HH2*\overline{ChN2})*Copl*T4$     **pipicoplT4_3.lst**

**"new"**

$K^+\pi^-$     $(\pi^+\pi^- \text{ copl})*VH1(16\text{-}20)*VH2(1\text{-}15)*\overline{ChF1}*T4$     **piKplus_3.lst**

$K^-\pi^+$     $(\pi^+\pi^- \text{ copl})*VH2(16\text{-}20)*VH1(1\text{-}15)*\overline{ChF2}*T4$     **piKminus_3.lst**

**Tables loaded to T4 processor provide selection of all 3 types**
**of atoms:** $\pi^+\pi^-$, $K^+\pi^-$ and $K^-\pi^+$

Mixed trigger (standard trigger for data taking):

| $K^+\pi^-$ | + | $K^-\pi^+$ | + | $\pi\pi$ atomic | + | t1ee |

k=1/2        k=1/12

file

mix2007.lst

**Other triggers for special purposes:**

$\pi+\pi-$ copl without ChN in trigger        t1copl_noCh.lst
$\pi+\pi-$ without copl, and without ChN       t1_nocopl_noCh.lst
one-arm triggers: left  arm, VH1*HH1         arm1.lst
                  right arm, VH2*HH2         arm2.lst

There exists dedicated trigger from generator which allows to test electronic channels in trigger and DAQ systems without the beam, file  **test_gen_all.lst**

For recording data with any of mentioned triggers the standard configuration of DAQ is used, file  **std.cfg**

In order to measure ADC pedestals, trigger file  **ped.lst**  is used
with the DAQ configuration file  **std_ped.lst**.
This trigger file is used when spills from PS are available.

In absence of PS spills the pedestals can be measured with
trigger file  **test_ped.lst**,  then spill is generated by our electronics.

Trigger rates at the beam intensity ~13.5 $*10^{10}$ 1/spill

| T1 in | T1 out | $K^-\pi^+$ | $K^+\pi^-$ | T4 | Dead time |
|-------|--------|------------|------------|------|-----------|
| 6000  | 4600   | 1000       | 2000       | 1750 | 22%       |