

# WG on simulations: some introductory remarks

W. Scandale

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## What for ? Why now ?

- Is the UA9 layout sound and close to the optimum ?
- Do we have a clear view of the experimental priorities ?
- Are we ready to handle short and sparse shifts in the most effective manner?

## Organizational issues

- a small committee to call the meetings, prepare the agenda, write minutes
  - ✓ Bob, Andrei, Marco (many thanks)
- 3 WG reflecting the ground interest, each with a coordinator reporting the progress

# WG's goals - 2

## □ Impact parameter and extracted beam profile

### ✓ Optimal diffusive regime of the beam halo

- Parametric simulation as a function of the damper voltage and octupole strength
- Impact parameter versus impact angle
- Impact parameter versus crystal position ( $6\sigma$  position is an appropriate choice?)
- Beam lifetime (+ crystal position dependence)
- Diffusion speed (+ crystal position dependence)

### ✓ Measuring the impact parameter/angle and profiles

- Impact parameter distribution at the crystal (w/wo cerenkov detector)
- Impact parameter distribution at the RP1 (inner and outer pots) (w/wo crystal)
- Impact parameter distribution at the TAL (is the Cerenkov of any use ?)
- Impact angle through betatron phase relations ?

# WG's goals - 2

## ❑ Loss localization

### ✓ Crystal versus amorphous primary

- Baseline loss maps
- Differences in loss map
- Optimal ring locations to identify loss difference
- Optimal detectors and optimal sensitivity (are the UA9 detectors of any use ?)

### ✓ Are we able to detect anelastic or diffractive interactions?

- Proton-crystal interactions with energy loss
- Proto-tungsten interaction with energy loss
- Loss map of these off-momentum particles
- Can-we detect some off-momentum loss with the scintillators close to Q521 ?
- Better instruments ? sensitivity ?

# WG's goals - 3

## □ Machine

### ✓ Stability of the CO

- Any prescription in case we have fluctuations ? (up to 200  $\mu\text{m}$ )

### ✓ Tune, chromaticity

- Sensitivity in diffusive mode

### ✓ Beam lifetime

- Effect of residual gas (negligible ?)

### ✓ Align the UA9 movable devices with beam loss

- Suggest the optimal procedure and the possible pitfalls

### ✓ Align the crystal to the beam

- Expected loss map
- Expected signals in the UA9 detectors
- Suggest the optimal procedure (non-reproducibility of the goniometer orientation)

# WG's goals - 4

- ❑ collimation efficiency

- ❑ Using beam lifetime

  - ✓ Particle incoming into the crystal

    - Check if all the lost particle hit the crystal

  - ✓ Particles incoming into the TAL

    - Check if the cerenkov will give a correct estimate

- ❑ Using the two Cerenkov

  - ✓ Particle incoming into the crystal

    - Is the cerenkov giving a correct estimate (sensitivity to the alignment + multipass)

  - ✓ Particles incoming into the TAL

    - Check if the cerenkov will give a correct estimate

# I did it on purpose

- Ignore possible difference of strip vs quasimosaic crystals
- No plans to use RP2 information yet
- No plans to use the IHEP tank yet

All this is for a later iteration