# ARE WE READY TO PUT A CRYSTAL IN LHC?

R. Losito – UA9 Workshop

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# Outline



- Motivations
- Issues

# Motivations



- The last two years in the SPS :
  - Confirmed assumptions and simulations on multiturn effect
  - Provided more insight on possible problems (see e.g. Valentina's talk), and a common framework to start the discussion between accelerator physicists and crystal experts.
  - Gave confidence that we can, even with limited resources, easily set-up and upgrade a layout for the experiment: the components of a crystal collimation system are quite trivial to prepare and install (if you know how to do it…).

# Motivations



- The last two years in the SPS :
  - The interest in the technique of crystal channeling and collimation has been expressed several times by the previous and the present Directorate (independently from its application to LHC: see tomorrow's session).
  - It is therefore natural for us to start looking forward, while we still have a lot of work to do in the SPS.
  - It is the duty of the collimation project leader to propose a layout for collimation in the LHC
  - It is our duty (or our privilege!!) to prepare the tools that will allow any test in the LHC.

# Issues



- Physics:
  - Channeling is the effect on which we decided to investigate with more care
    - Volume reflection, though attractive in the multi-crystal configuration, has technical difficulties that we have not today the resources to investigate
    - T980 is clearly focussed on VR, therefore we better stay in synergy and optimise the use of both experiment's resources.
    - An attractive feature of channeling, with respect to VR, is the "absence" of off-momentum particles, as confirmed by measurements performed in the dispersive region in the SPS and in H8.

# Issues



- Physics:
  - We need to improve our simulation tools, and use the "standard" tools used by the LHC teams to convince them of the solidity of our results.
    - Use sixtrack for tracking simulations in the SPS?
    - FLUKA for energy deposition and generation of showers: we need a model of the crystal (see Philippe's)

# Issues



- Technical :
  - Goniometer:
    - What are possible specs (see Sasha's talk)
    - What can we achieve today (Yuri & Yuri)
    - What can we hope from the state of the art (coffe?)
  - Observables
    - What should an experiment in the LHC demonstrate to become a valuable input for the collimation project? (Ralph)
    - What should we measure → what kind of detectors we need to provide (channeling/collimation efficiency?)
    - What should we do in the SPS to convince that we are ready to go in the LHC (Ralph, Rudiger, Jorg?)