Costruction and Test of a new E.M. Calorimeter for a future Linear Collider

- Padova
- LNF
- help from DESY !? + ...

Requirements for ECAL in TDR di TESLA (LINEAR COLLIDER):

- high granularity,(Energy Flow)
- σ_E O$(10\%/\sqrt{E} + 1\%)$
- longitudinal segment. (e/π) separation,
- working in magnetic field
- high density (25-30 X_0 in $\sim$ 50 cm)

Solutions in TDR:

- Shashlik (thanx to CALEIDO)
- Si W (Cost ??? 35 M chann.???)

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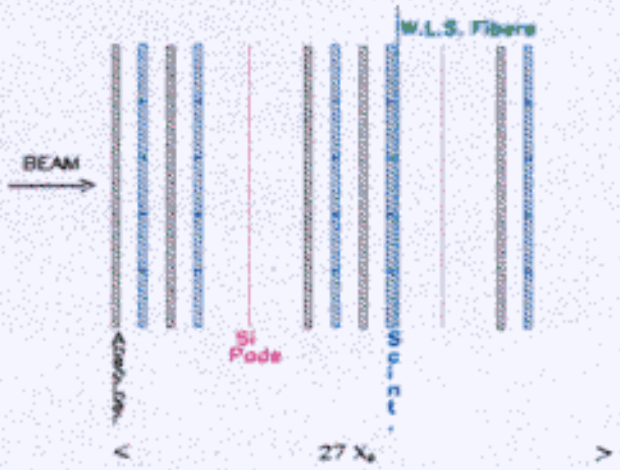
New Solution

Keep Si W advantages:

- *flat* geometry (~~no~~ ~~puntante~~ *software*) Pointing reconstruction:
- optimal shower-shower separation

Prototype Pb/Sc + Si:



- 50 layers:
- $25 \times 25 \times 0.3$ cm^3 Pb
- $25 \times 25 \times 0.3$ cm^3 Scint.: 25 Cells 5×5 cm^2
- 3 planes:
- 625 1×1 cm^2 Si Pads
- at: 2, 6, 12 X_0

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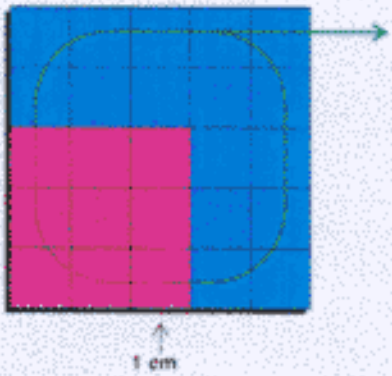
SI Planes



Goal: shower-shower separation

- Lateral dimension $\leq$dimension of shw.)
  1×1 cm^2
- Longitudinal sampling
  3 planes
- Analogic R-O
  Viking System (not yet available)
- Shower dimension reduction
  Tungsten absorber (2002)

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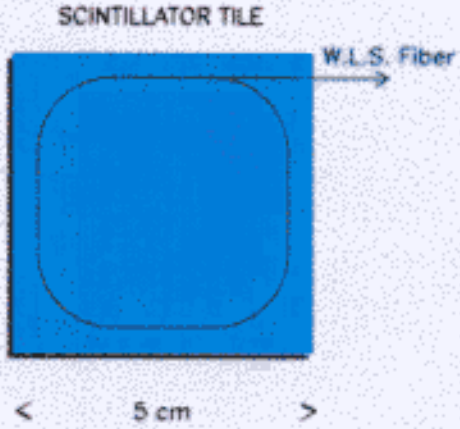
Scintillation light transported with fibers: WLS σ *tail*



Optimize:

- curvature radius
- response omogeneity
- coupling with clear fibers
- cells separation (i.e.)

R-O with PM, Tetrode, APD, ... R-O

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