



Report from Montpellier

US Monthly IPBI Meeting
December 3rd, 2003

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University of Oregon

<http://www.lpm.univ-montp2.fr/~pheno/>

[http://www.desy.de/~buesserk/bdir/
montpellier.html](http://www.desy.de/~buesserk/bdir/montpellier.html)

Talks not online (yet)!



Overall Impressions



New Working Group Name

Beam Delivery Interaction Region (BDIR)
formerly Machine Detector Interface

New Convenor Lineup

Philip Bambade, Grahame Blair,
Karsten Büber, Nick Walker

Lots of talks

3 1/2 hours scheduled

+ 2 hour discussion session on future plans

Sessions well attended

(by upper management as well)

The Matrix

4 page task list with

~ 30 specific items and names



Original motivation

How can we help UK spend £12 M?

Reality

UK bid well received by PPARC,
except spectrometer component.

(too detector related, no ownership)

Spent several hours reviewing BI needs
and activities. Mostly already in white paper.

Useful for Philip Bambade.

DESY (Schreiber) is building RF BPMs with
wide aperture/high precision for spectrometer
application. May test next year. Problems with €.



To Cross or not to Cross?



Possible technology factor
need to be ready for question from ITRC.

Nick Walker

- Different technology issues (head-on vs. X)
- None appear insurmountable in X
- No head-on design for $\sqrt{s} > 500$ GeV now
- Many machine problems become easier in X

Is there a quantifiable
physics argument for head-on?

For Paris: Does X effect physics capabilities?

- Forward acceptance (SUSY)
- Detector backgrounds
- Mask design (Lumi monitor)
perhaps most significant problem for Tesla,
but already solved for NLC...
- X-line diagnostics (not addressed by Europe)

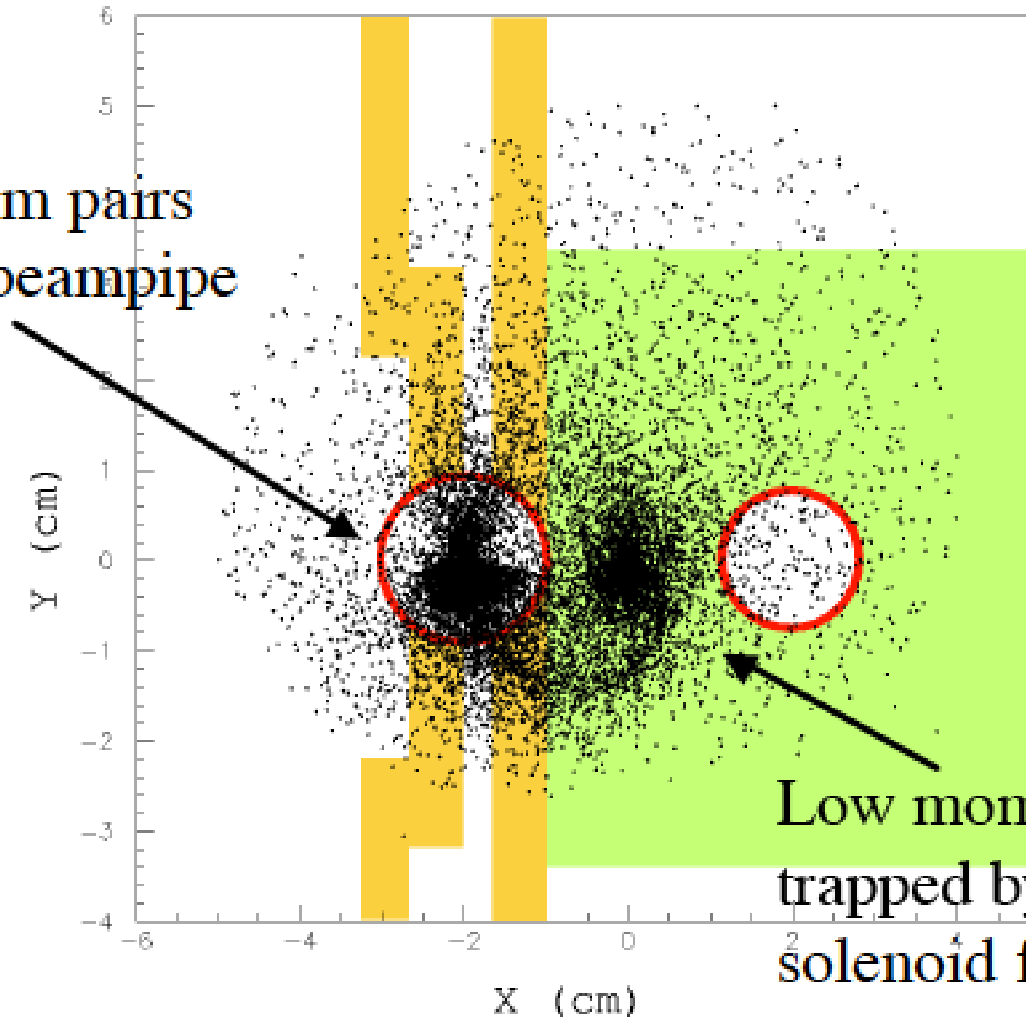


Acceptance 'Hole'



6 Tesl.

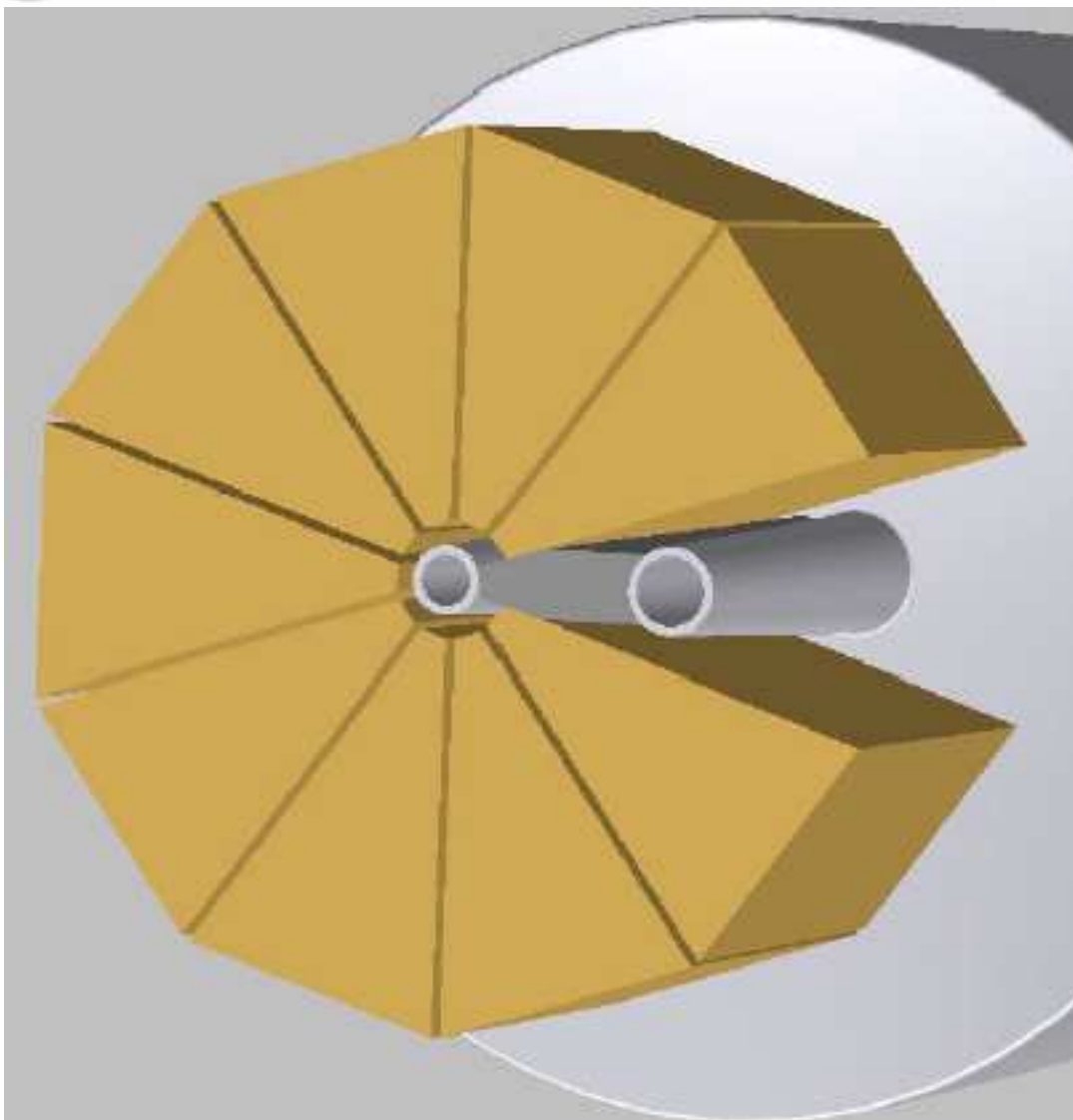
High momentum pairs
mostly in exit beampipe



Low momentum pairs
trapped by detector
solenoid field

Tom Markiewicz

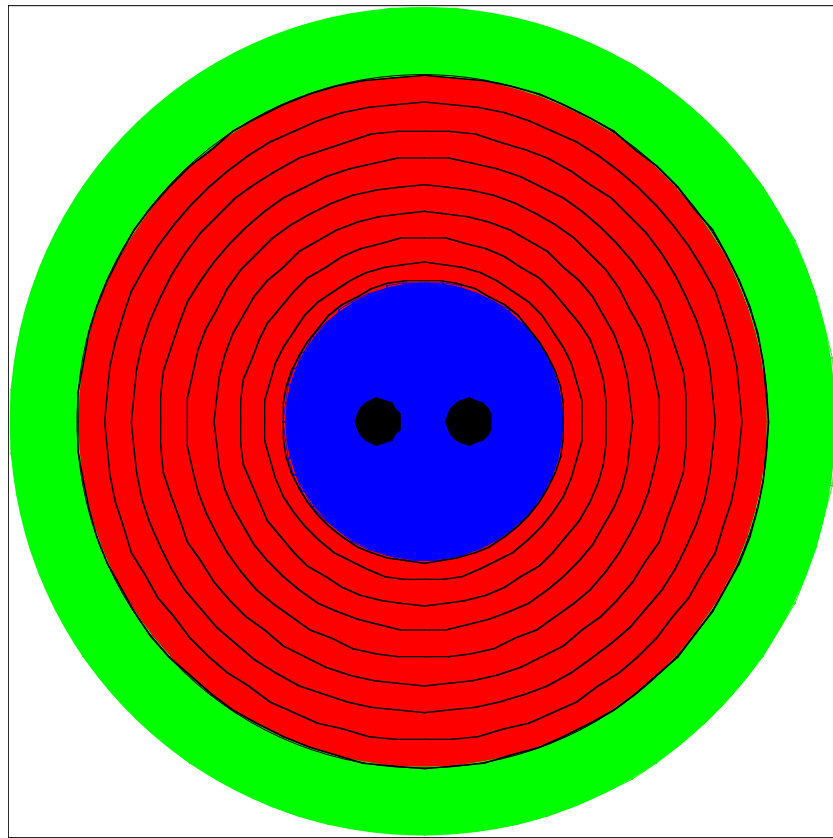
Hole = Beampipe + pairs



Generator-Level study

- Assume $\sim 1/8$ of forward detector is **missing**
- Calculate effect on background rejection
e.g.: $e^+e^- \rightarrow e^+e^-\mu^+\mu^-$ for SUSY modes

Can already guess effect will be
 $\sim 15\%$ efficiency loss, but not catastrophic.



10 mRad half-angle crossing
Zeuthen BEAMCAL (5-30 mRad)
LUMICAL (30-80 mRad) simulation

Studied Boost (Lumi mostly)
and acceptance (SUSY veto) issues

Short answer:

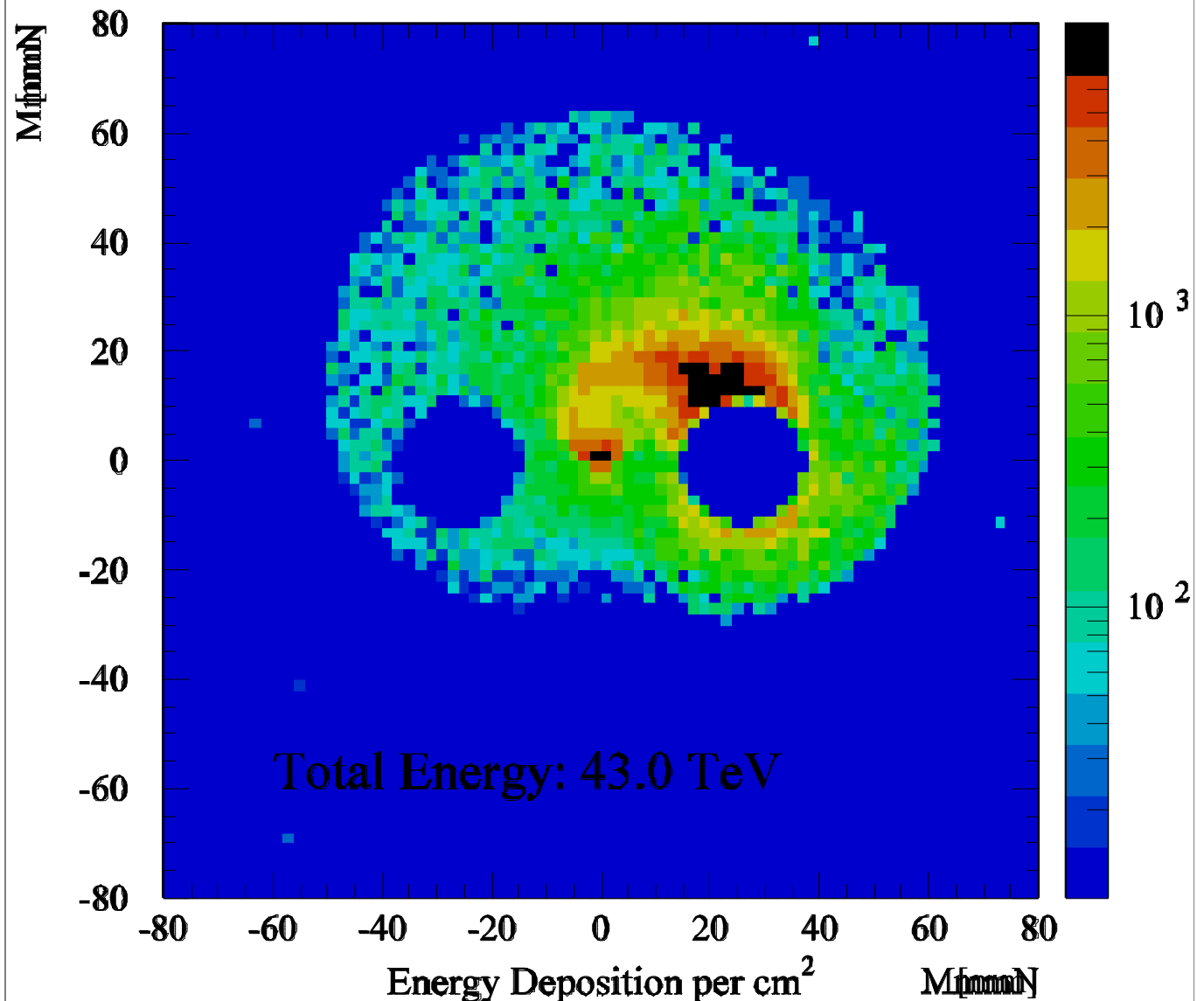
Boost gives no significant problems
Acceptance hole degrades SUSY veto



Simulated Pairs



Energy Deposition at $z=2.60$ m 2003/03/19 09:06



$\langle E \rangle = 43.0$ TeV with X

$\langle E \rangle = 25.6$ TeV without

Not quite a pure wedge...

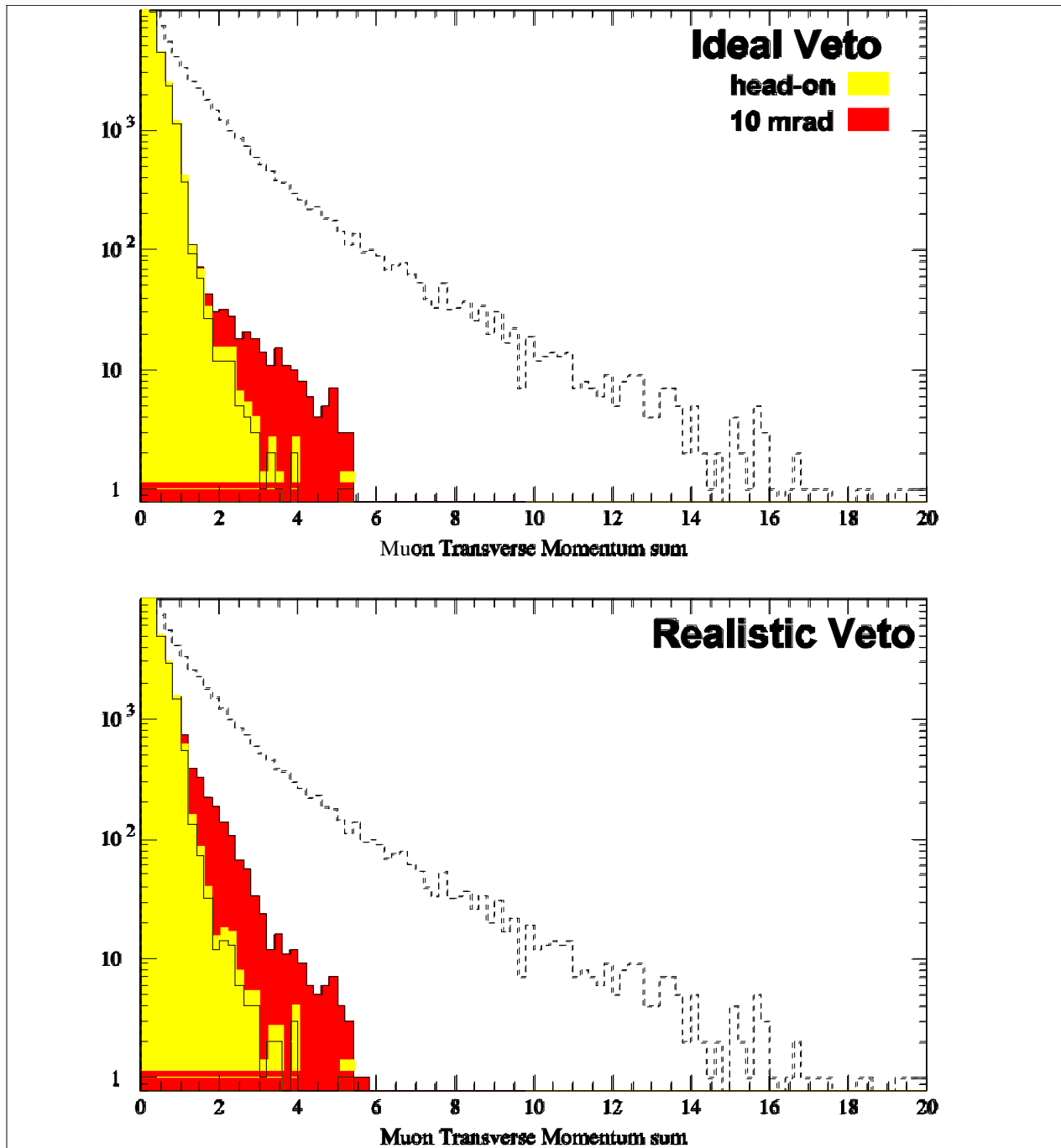
Hard to use pairs as lumi monitor?



Results

Two-Photon Veto

2003/03/24 17.15



$\mu^- \mu^+$ transverse momentum sum for
two-photon events after veto

Integrated over azimuth!



Other interesting things



Lumi Spectrum

- Stewart Bogart (UCL) - Bhabha acolinearity
- Freddy Poirier (QMUL) - Bhabha energy

Rather sophisticated unfolding procedures

Polarimetry session

Long discussion of “pol write-up”

Too much theory, not enough concrete motivation
90%/60% quoted as “expected” at SLAC???

Final Focus Design

- Preliminary design (maskless) for $L^* \sim 4\text{m}$
- Not much enthusiasm to run all backgrounds

Money

- Large task matrix with names
- UK proposal will support ~ dozen postdocs
- Planning to submit EU grant request for European design team in advance of international design committee

Where to find people to hire?