WG2 Summary

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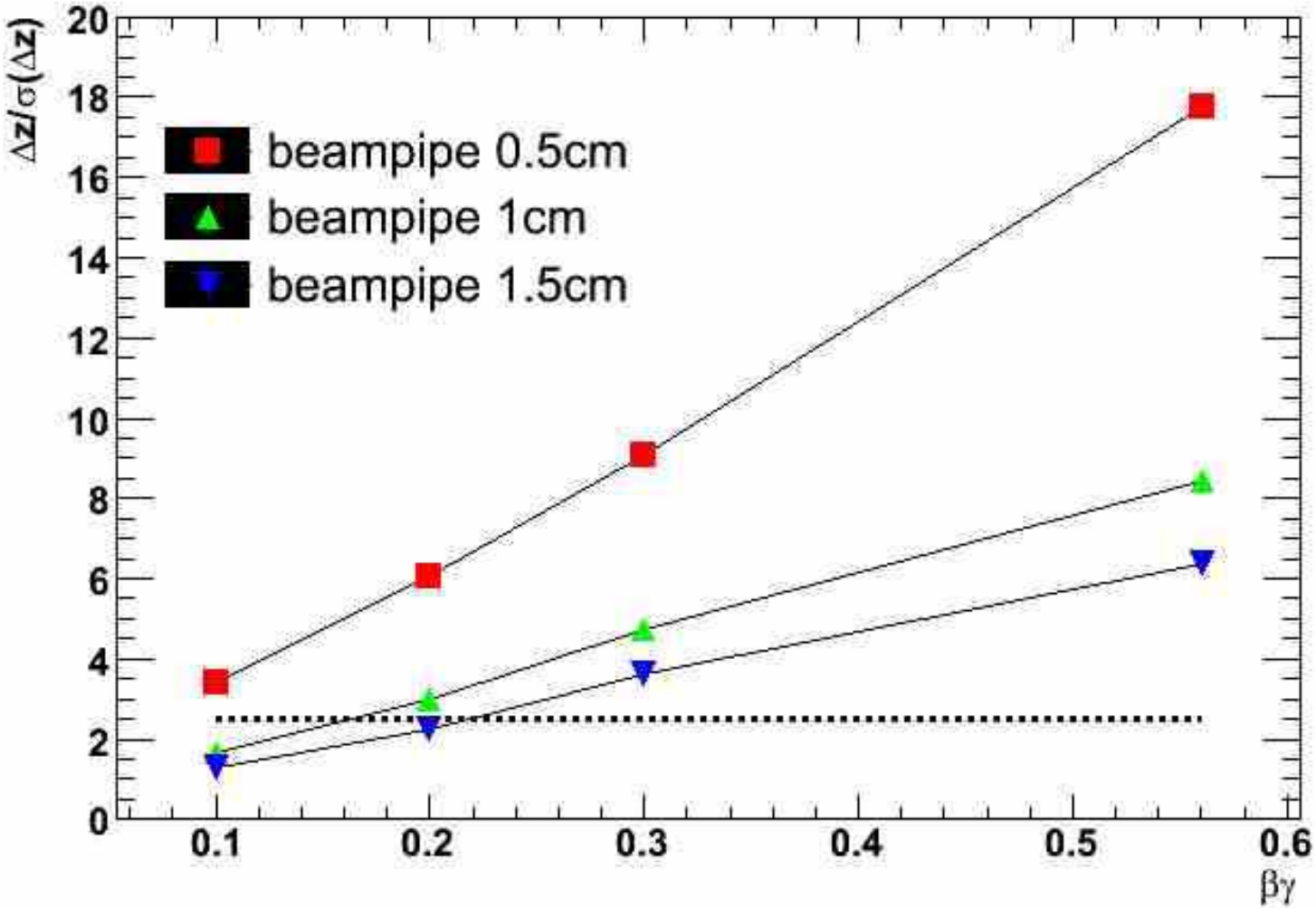
Baseline Assumptions

- **Boost**
  - $\beta\gamma$ = 0.28 (4 x 7 GeV)
  - Implies about 1cm radius beam pipe
  - Will continue to explore parameter space including more aggressive options for vertex resolution
- **CM energy spread**
  - 5 MeV or better preferred, 10 MeV about the limit
  - What will count in the end of sensitivity/year of data taking
- **DAQ rate and backgrounds**
  - 1 MHz single bunches preferred, L1 trigger rejection by factors of 10-100, 1-2 μs detector response time ok
  - 100kHz x 10 bunch mini-trains or other variants probably ok, although more possibility of event overlap
  - Currents through detector reduced by 1000, so assume backgrounds are as well

Vertex difference resolution vs boost

Neri, Pierini



Pixel concept

- *Monolithic Active Pixels*
- *Thinned to 50um*
  - Possible because active region is only about 10um thick
- *With 5mm BP, 3mm2 chip could be OK.*
- *Glue on kapton foil*
- *Support kapton off BP*
- *Reduce thickness of Au shield*
  - How much can we thin it ?
- *Many issues to resolve*
  - Feasibility of a MAPS system
  - z overlap
  - Cables, cooling
  - Mechanical support

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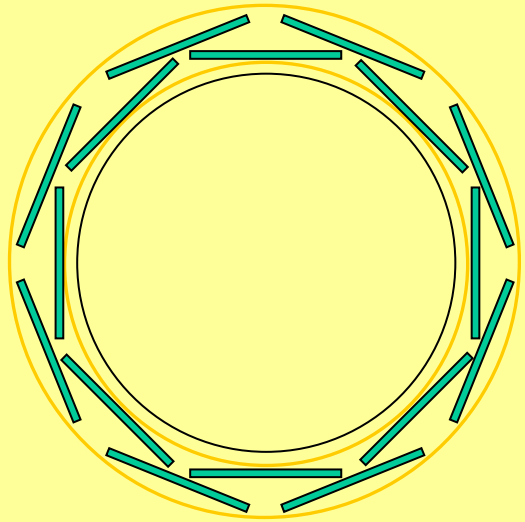

x10 scale with 5mm radius BP, 3mm pixel chip

Lots of MAPS R&D in many places

Detector Implications

- *Existing technical solutions in BABAR or Belle will work, for the most part*
- *Areas for upgrade*
  - Calorimetry coverage in backward direction, with possibly different choice for crystals
  - PID in forward and backward directions
  - More aggressive vertex inner radius and choice of innermost detectors
  - LHC-style performance for DAQ: pipelining and network event building capabilities
  - Optimization of other detector elements for smaller boost
    - Possible extension of angular coverage
    - Other variants for wire chamber design

Writing Assignments

- *Goal*
  - First draft document by Dec 1
  - Roughly one page per section
  - Baseline plausible solution + aggressive options to explore
- *Sections: Editor = Francesco; First draft by Nov 21 or earlier*
  - Overview: dbm
  - Backgrounds: Steve, Justin
  - Physics impact of basic parameter assumptions: Aaron
  - Vertexing: Nicola
  - Tracking: Francesco, dbm
  - PID: David Leith
  - Calorimeter: David Hitlin
  - Muon: Giancarlo (?)
  - Trigger & DAQ: Gregory (?), Aaron
  - R&D: Francesco with input from each section author

R&D List

- *Vertexing:*
  - MAP devices
- *Tracking:*
- *PID:*
  - Fast DIRC, proximity focusing aerogel, TOP
- *Calorimeter:*
  - LSO, LYSO, undoped CsI
- *Muon:*
- *Trigger & DAQ:*
- *+ additions from section authors or Belle leadership*

Homework List

- *Bhabha acceptance (DH: Nov 12)*
- *Event pileup studies (AR: Dec 31)*
- *Beampipe conceptual design (Dec 31)*
- *Physics gains with improved angular acceptance (PAC: Dec 31)*
  - B to tau-nu, Knu-nubar
- *Understand final focus well enough to know stay clear zones (Justin+?: Dec 31)*
- *Boost and energy spread impact on representative channels, including Δt conversion (Dec 31)*
  - B to phiKS, KSpi0, pi0pi0, and LFV
- *New vertex strategy for charm vertex in tagging (Feb 1)*
  - Implications for vertex detector radius + beam pipe
- *Contacts with Belle management (now)*
- *Next workshop before March (?); next steps; steering committee (?)*