Forward Calorimeters

W. Morse - BNL

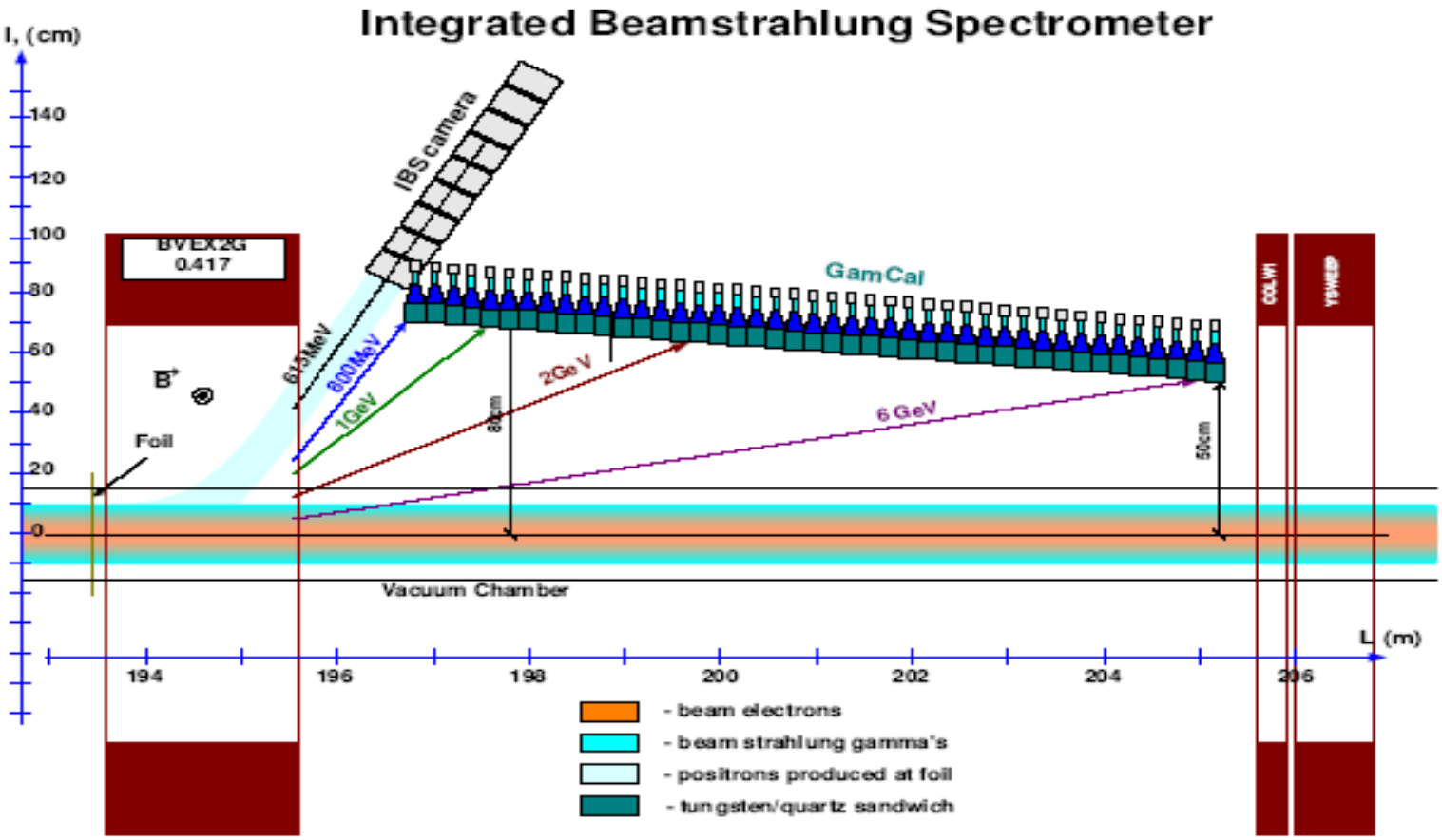
Forward Calorimeters

- I am a member of FCAL, an international forward calorimeter R&D collaboration.
- Wolfgang Lohmann (DESY Zeuthen) is the spokesman.
- I am FCAL beam diagnostics coordinator, and SiD forward calorimeter coordinator.

Forward Calorimeters

- LumiCal – precision integrated luminosity measurement (Bhabhas), and hermeticity
- dL/L $<10^{-3}$ for $\sqrt{s}$ = 0.5TeV - challenging
- dL/L $<2\times10^{-4}$ for GigaZ – very challenging
- LHCal – ID muons behind LumiCal
- BeamCal – instantaneous luminosity optimization (beam-strahlung pairs) and hermeticity
- GamCal - instantaneous luminosity optimization (beam-strahlung γ detector at z $\approx$190m)

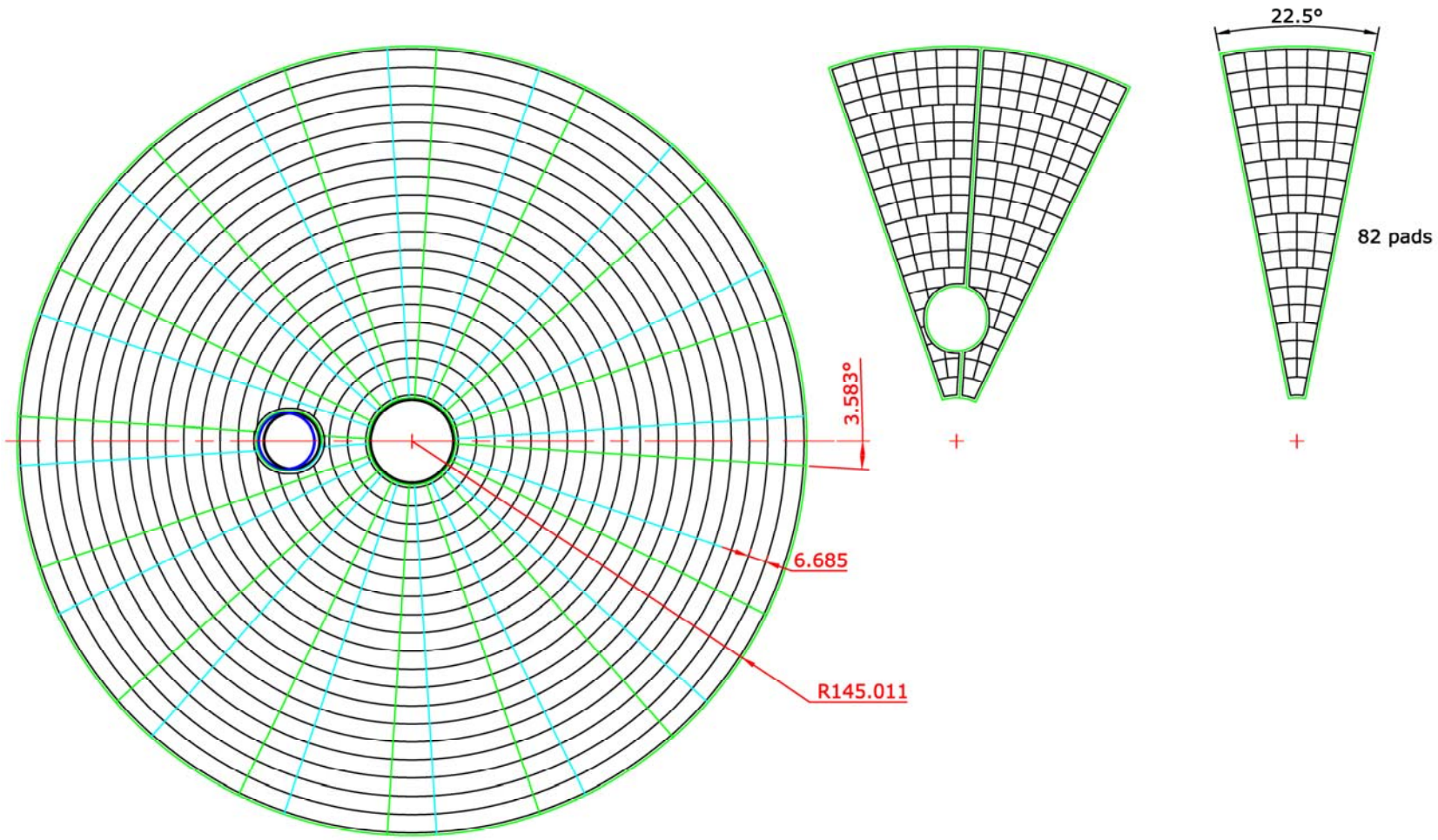
GamCal – Yale Design



GamCal

- Mike Zeller Yale team GamCal simulation efforts have dissolved after Black December.
- Jeff Gronberg LLNL interested in GamCal foil target calculations.
- Nicolas Delerue Oxford interested in GamCal simulations.
- GamCal teleconference Jan. 18 with me, Mike, and Nicolas.

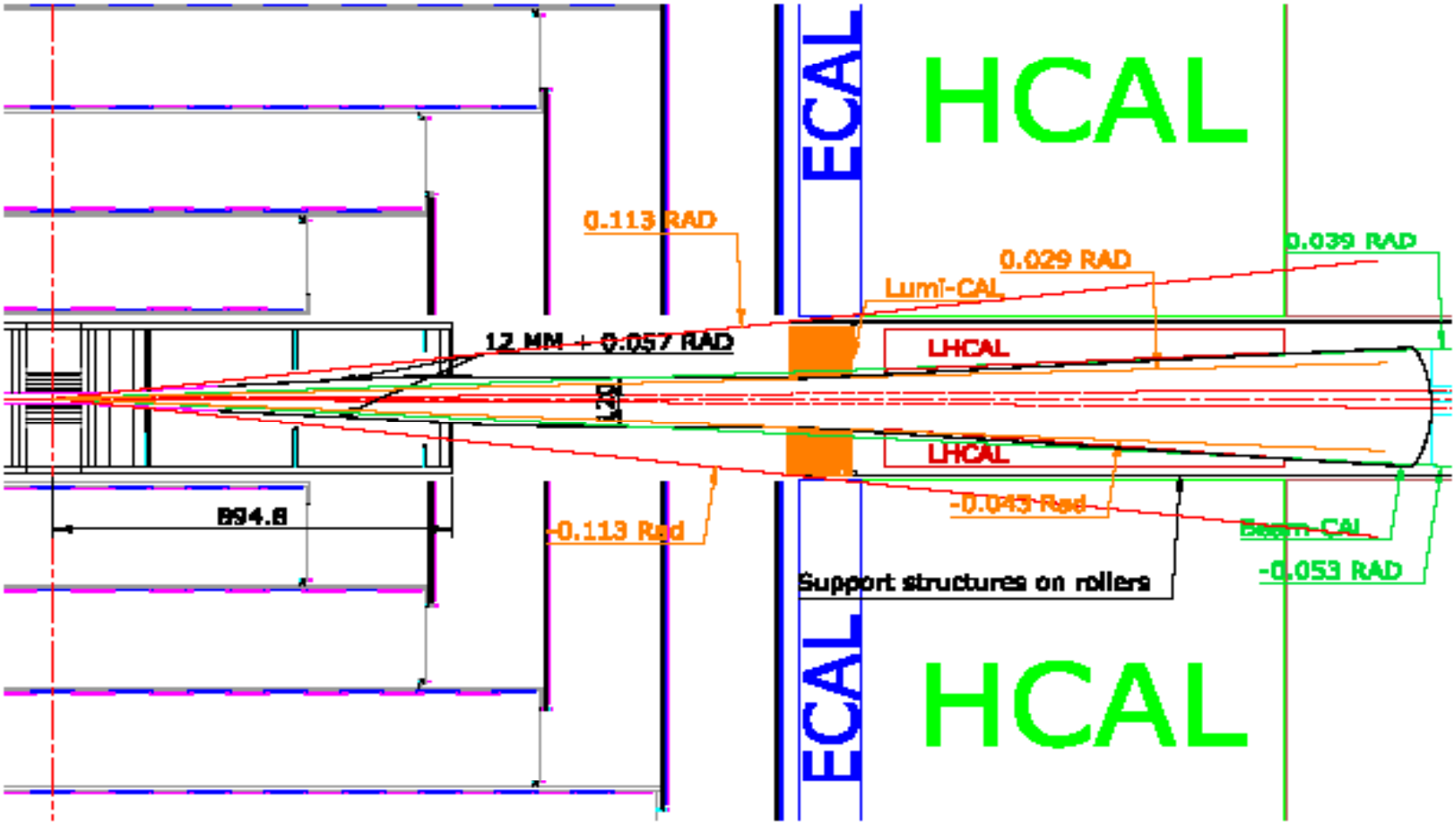
BeamCal – Bill Cooper's Latest



Neutron Backgrounds

- Recent calculation of the neutron fluence at the SiD VXD layer 1 by Takashi et al.
- 1.1×10^9 MeV equivalent n/cm^2/yr from the beam hitting the dump at z $\approx$ 300m.
- Including neutrons from the pairs hitting BeamCal, etc. gives 2×10^9 MeV en/cm^2/yr
- VXD Si radiation damage FoM: 10^{10} MeV equivalent n/cm^2
- Investigate 1/3, 2/3, 1 X_0 borated poly in front of BeamCal
- Colorado looking at hermecity issues
- SLAC looking at neutron moderation

Bill and Kurt's Penultimate



LumiCal

- No U.S. effort in LumiCal simulations.
- Luckily, major FCAL E.U. LumiCal simulations efforts.
- Bill M./Bill C./Kurt excellent interactions to make sure LumiCal fiducial region can do the physics (upstream material, inner edge, etc.) using only analytical calculations.
- Larger support tube radius just makes LumiCal fiducial region more comfortable for physics.

SiD forward calorimeter LoI planning webex meeting April 28 10am PT

- SiD LoI – John
- Background calculations – Takashi
- Physics simulations – Uriel
- Geometry – Bill C.
- M.E. – Kurt
- E.E. – Gunther
- MDI – Tom
- New people are welcome!