(LLR) plans for the simulation of the SiW ECAL in a reduced version ILD

2 mains ways to reduce the cost of the SiW ECAL

- Redution of Radius with fixed R/Z ratio
  - ⇒ TPC, ECAL ($\propto R^2$), HCAL, Coil, Yoke, Cavern, (tunnel)
  - R 1800→1400 @ N_{layers}= “30”: JER +10 %
- Reduction of number of layers
  - N_{layers} “30” → “20” @ R=1800: JER + 9%
  - N_{layers} “30” → “20” @ R=1400: JER + 6%

⇒ Simulation modifications for reduced radius & layers.

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Ideas only : all dimensions to be refined by mechanical model

Reduced radius ~144cm (to be validated by a modified model of endcaps)

- Largers Wafers: 8" (would be OK from HPK, LFoundry)
  - Wafer side: ~10 → ~13 cm; Alveola ~20→~26 cm;
    - Barrel: 5 modules of 3 $_{(was\ 5)}$ alveola ⇒ L_{Barrel} ~390cm
    - Endcaps: with R(ECAL Ring) = 40cm (?) → R = 40+4*26 ~ 144cm

N_{layers} = 24 = 16 + 8 (single and double W thickness)

Wafer thickness 500→ ~700µm

- Improved σ(Eγ) ∝ $\sqrt[5]{t}$ ⇒ ~recovery of N_{layers} effect

Option to render the 1st Si layer standard ⇒ SEcal06 driver ?

- 1 layer of W in front 1st alveola ⇒ no preshower; keep option to *not* have it.
- more regular structure: $n_1/2\times(W_1+[Si+W_1+Si]) + n_2/2\times(W_2+[Si+W_2+Si])$
  - Now : $[Si+W_1+Si] + (n_1-1)/2\times(W_1+[Si+W_1+Si]) + W_1 + n_2/2\times([Si+W_2+Si] + W_2)$
- For hybrid: alteranate Si and Sc alveola [*]

(Implementation of SEcal05 in DDHEP based on S. Lu implementation of SEcal04 + tests)

on-going:

- D. Jeans: correct & improve GEAR output.
- E. Becheva & D. Yu : review documentation & code (endcaps, ...)