Two-Layer Cosθ (TLC) for the FCC

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Wednesday August 30th, 2017
09:45 – 10:15

See full talk this afternoon MT25-Wed-Af-Or23-06, Auditorium, 16:15
trey Holik, Giorgio Ambrosio, Giorgio Apollinari
What’s the Goal?

- Future Circular Collider: 16 T (Tevatron: 4 T, LHC: 8 T) \( \rightarrow \text{Nb}_3\text{Sn} \)
- Standardized Design Specifications: EuroCirCol \( \text{Tommasini et al.} \)
  - Bore size, Peak stress, Quench criteria, Cond. prop., etc.
- Proposed designs:
  - Have four layers
  - Use projected \( J_c \) values 16% above best attainable

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Two-Layer FCC Dipole
Obtaining 16 Tesla

• What’s desired???
  – Efficient Conductor Use -> $\cos \theta$
  – Less complication, fewer parts -> Minimize # blocks
  – Reduce Coil Fabrication -> Two Layers
  – Buildable Today! -> Use attainable $J$

What do the numbers say???
The Two-Layer Cos ($TLC$)!
The **TLC** Offers Simplicity and Meets Requirements

- Conductor geometry and copper ratio **well within spec.**
- Field Quality **within spec.**
- Quench T **within spec.**
- Peak Stress **within spec.**
- Current (**27.8 kA**) **Unavoidable...**
- Is it currently **BUILDABLE??**
  - **YES**, with some challenges but...
    ...Hi-Lumi is building experience and opportunity awaits!
- See Wed-Af-Or23-06!!! (This room, 16:15)