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The Superconducting Shield (SuShi) septum magnet prototype

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The Future Circular Collider would require a high-field septum magnet with a possibly thin blade for the extraction of the 50 TeV proton beam from the ring. One of the two baseline concepts in the conceptual design report is the “superconducting shield” (nicknamed as SuShi) septum, utilizing a zero field cooled, passive superconducting shield in order to create a zero-field channel inside the bore of a canted cosine theta (CCT) type superconducting magnet producing about 3 Tesla field outside of the shield. The optimization of the magnet and shield geometry, estimations of field quality, engineering design, and progress with the construction of the prototype will be presented.

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