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A finite element study of stress reduction techniques in REBCO HTS conductor on a round cable (CORC) cable

Wednesday 13 August 2025 16:00 (2 hours)

ReBCO high-temperature superconducting (HTS) tape is critical for achieving the high magnetic fields needed in next-generation particle accelerators. Enhancing the mechanical performance of ReBCO tape increases its critical current by reducing internal stress, especially in the superconducting layer. A finite element study examined how copper layer properties affect stress in ReBCO conductor on a round core (CORC) cables. The cable was modeled as a doubly supported beam under uniform compressive stresses."cable was modeled as a doubly supported beam under uniform load to simulate bending. A staged modeling approach—from a single tape to a six-layer stack—enabled validation and efficient parameter studies. Increasing the yield strength and Young's modulus of the copper layers reduced peak stress in the ReBCO layer. These results support development of improved tape stacks for high-field accelerator magnets

Please consider my poster for contributed oral presentation

No

Would you like to submit this poster in student poster session on Sunday (August 10th)

Yes

Footnotes

Funding Agency

DOE- RENEW

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Yes

Author: MUELLER, Scott (Fermi National Accelerator Laboratory)

Presenter: MUELLER, Scott (Fermi National Accelerator Laboratory)

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