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## **Wed-Af-Po3.15-02 [6]: Bending properties of quasi-isotropic strands made by 2G wires at 77 K**

*Wednesday 25 September 2019 14:00 (2 hours)*

This paper numerically and experimentally studies the mechanical properties of quasi-isotropic strands under bending load at 77 K. Due to quasi-isotropic superconducting core fabricated by 2G wires existing in strand, bending on strand in different directions will lead to various critical current degradation, which will necessary meet during the winding of them into high current cable. Trough rotating the strand sample in tests, the dependence of bending radius on bending direction is obtained. A 3D mechanical model of quasi-isotropic strand built by ANSYS is used to analyze the bending behavior and estimate the measured results, with consideration of the slipping phenomenon of wires. In addition, similar quasi-isotropic strand but with annealing copper tube is also tested to explore the possible methods for improving the bending characteristics. Basing on the results from the work, high current Conduit-in Conductor cable (CICC) or Rutherford Cable made by the strand can be designed.

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