• Status of the preparation of MDP test for “in-field quench studies of a long CORC cable” in the background field of common coil dipole

• A possible opportunity of more complete HTS coil studies thanks to the opening offered by the upcoming USMDP PSI test
Two Related R&D programs. Magnet Design Program (MDP) and Small Business Technology Transfer (STTR)

• MDP: “In-field quench studies of a long CORC cable” in the background field of common coil dipole via one 8-turn HTS coil (S-turn in to flip the polarity)

• STTR: “Demonstration of a high field HTS/LTS hybrid dipole” with two sets of double pancake coils made with 6+8 turns (total 28 turns) of CORC cable
• Design work complete a while ago
• All parts obtained several months ago
• Parts were shipped from BNL to ACT for them
  • view them
  • make a practice cable
  • do initial winding test
  • Provide feedback
• ACT recommended tighter tolerances
• Some parts sent back to vendor
• Corrected parts received and sent to ACT
• New parts meet ACT expectations
A Few Coil Structure Parts
• Regular discussion continues between BNL and ACT, and between BNL and MDP collaborators, and with all parties combined
• ACT will be doing initial test winding by hand in a couple of weeks
• ACT will send the practice cable and the coil parts back to BNL in about a month
• BNL will wind the practice coil on universal coil winder under tension.
• Details to be worked out (significant work)
• Real cable in a few months
• Test expected in six months after that
A Possible Opportunities to Continue HTS Scientific Studies without Scheduling a New Test
An Upcoming MDP Test (12/21)

Only 1 of the 2 apertures of the common coil dipole is being used (aperture is a terrible thing to waste)
Possible Opportunity in the 2\textsuperscript{nd} Aperture

- During the last HTS/LTS hybrid test (Feb 2020), we didn’t have a bipolar power supply. Therefore, we couldn’t carry out complete hysteric cycle for the magnetization studies.

✓ Now, it is getting ready under US-Japan program

- Last time, the test was limited by LTS coil.

✓ Now, we have a better idea of how to overcome that

Why not explore this opportunity in one aperture to see if we can learn more
Summary and Discussion

• Even though MDP test for “in-field quench studies of a long CORC cable” in the background field of common coil dipole is delayed by ~3 months, we continue to make good progress.

• There is a good possible opportunity of carrying out useful experimental studies for HTS/LTS hybrid dipole.

➢ A personal opinion: Given the limited number of tests coming up every year in MDP and given the very limited knowledge of HTS/LTS coil interaction and of HTS magnetization, we should use all possible opportunity available, as long as there is a good scientific case.
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... and more