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C1Po1F-07 [40]: The Effect of the Material in a well-coupled shorted Secondary on Quench Protection of an Insulated ReBCO Tape Solenoid Magnet that is Quench Protected by discharging the Magnet across a Constant Voltage Resistor

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Studies suggest that an insulated ReBCO tape solenoid coil that is well-coupled inductively to shorted secondary can effectively be quench protected by discharging the coil across a constant voltage resistor. The discharge voltage across the constant voltage resistor is much lower than it would be for a constant resistance resistor that is used to achieve the same final quench temperature with or without a shorted secondary. How this quench protection works, depends on the constant voltage resistor characteristics, the properties of the shorted secondary circuit material and the amount of the material in the circuit. A previous paper suggests that the RRR shorted secondary circuit material is not important, which means that aluminum can be used in the secondary circuit and structural aluminum can support both the coil and the secondary circuit when that aluminum is on the outside of a solenoidal coil.

Primary authors: Dr GREEN, Michael (Lawrence Berkeley Laboratory); Dr GUO, XingLong (Jiangsu University)

Presenter: Dr GREEN, Michael (Lawrence Berkeley Laboratory)

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