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M2Po2D-06 [48]: Thermal and electrical contact resistance of YBCO tape stacks at 77 K

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The thermal and electrical contact resistance of 10 stacks of YBCO coated conductor tapes was measured at 77 K. The ten stacks were conduction cooled, and had no insulation or other preparation between the layers. The stack of ReBCO comprised of ten pieces of superconducting tape each 30 cm long. To generate pressure on the stack of ReBCO tapes massive steel plates were used. The force of a single plate was 55.7 N resulting in a pressure of 2 kPa per plate. Up to four plates were used with the maximum pressure of 8 kPa Compressive force was applied was provided from an increasing amount of steel weights. The interlayer resistance was only reduced by a factor of 4 compared to no applied compressive force on the stack of ReBCO tapes. Effective thermal conductivity as well as effective contact resistivity were measured as a function of applied pressure, for pressures up to 8 kpA. Interlayer resistance ranged from 50-150 milliohms, and thermal conductivity values from 2.5-25 W/mK. These values have bearing on the use of NI schemes for magnet protection

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