**Background**

**Experimental set up**
- 13 T–ø130 mm SC magnet + VT1 @ NIMS
- Short sample probe up to 600 A
- Coil probe up to 300 A

![Image of Conductor and Lead Designs](Image)

**Coil layer winding**
- Manual winding by an operator with tension <1kg
- Max line speed 0.8 m/min
- Edgewise pressure applied for layer winding

![Image of Coil Winding Process](Image)

**Conductors**
- SuperPower REBCO conductors
- 5 different conductors characterised with \( B_1 \) and \( B_2 \) to tape surface
- \( I_c \) normalised w.r.t. 77 K self-field values show uniform performance till 50 K

<table>
<thead>
<tr>
<th>Tape ID</th>
<th>Width</th>
<th>( I_c ) at 77 K s.f.</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>M4-368-S</td>
<td>4 mm</td>
<td>158 A</td>
<td>Coil 1, Coil 2, Lead 1, Lead 2</td>
</tr>
<tr>
<td>M4-299-S</td>
<td>4 mm</td>
<td>155 A</td>
<td>Coil 3</td>
</tr>
<tr>
<td>M3-1174-4</td>
<td>4 mm</td>
<td>120 A</td>
<td>Coil 4</td>
</tr>
<tr>
<td>M3-1190-7</td>
<td>6 mm</td>
<td>249 A</td>
<td>Coil 5, Lead 3, Lead 4</td>
</tr>
<tr>
<td>M3-1720-5</td>
<td>6 mm</td>
<td>238 A</td>
<td>Coil 6</td>
</tr>
</tbody>
</table>

**Coil characterisations**

- 6 coils wound on ø65 mm bobbin
- \( I_c \) measurement by slow ramp up (in steps) till 1\( \mu \)V/cm then slow ramp down
- Coil temperatures measured at the top and the bottom of the winding

![Image of Coil Characterisation](Image)

**Lead evaluations**
- All leads performed in agreement with the conductor \( I_c \)

![Image of Lead Evaluations](Image)

**Summary**
- Conductor \( I_c \) measured with \( B_1 \) and \( B_2 \)
- 5 out of 6 coils validated by \( I_c \) measurements
- Three new types of leads designed and fabricated
- Lead designs validated by \( I_c \) measurements
- Coils quenched during measurements due to overcurrent
- Some uncertainty with coil winding technique remains

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