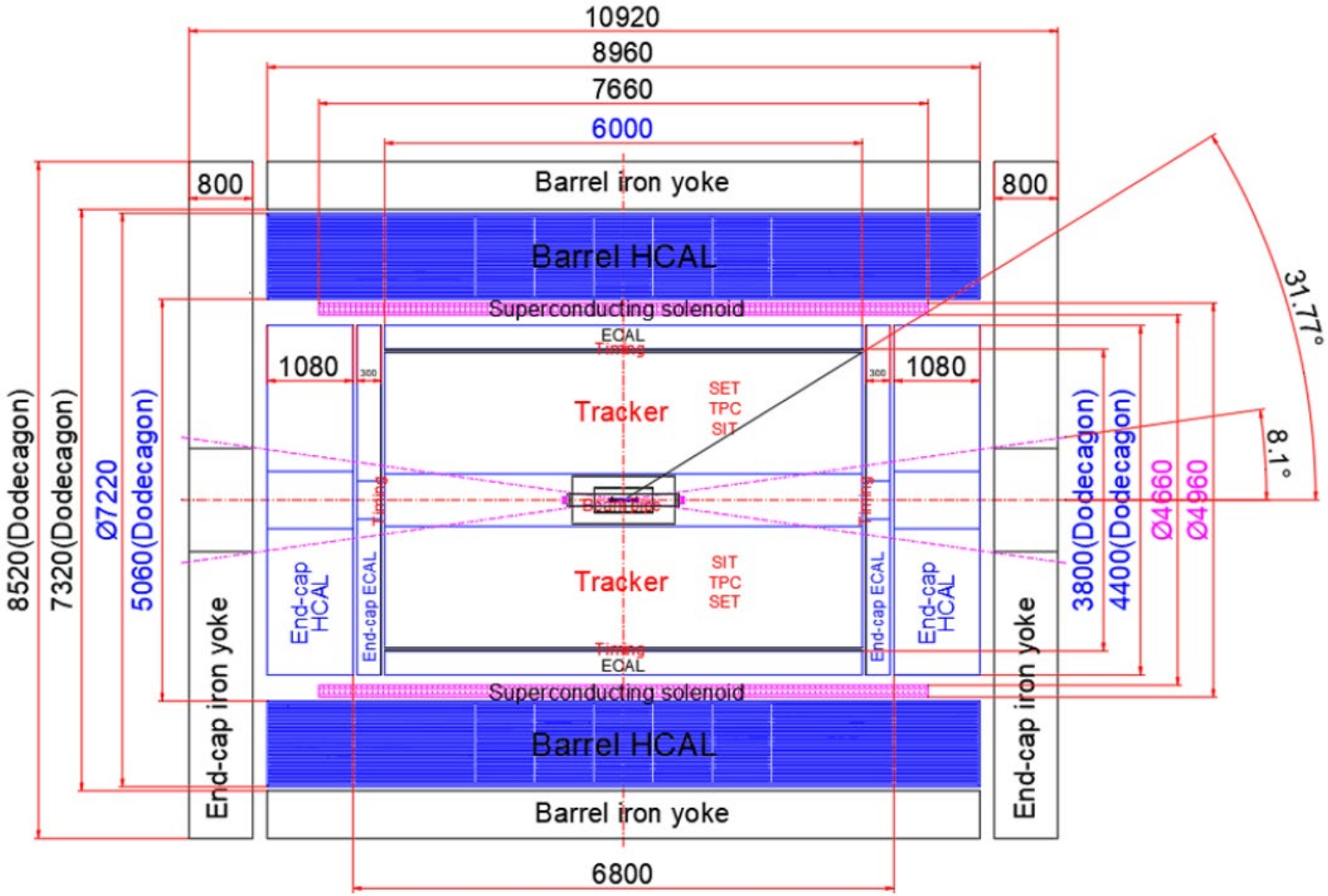
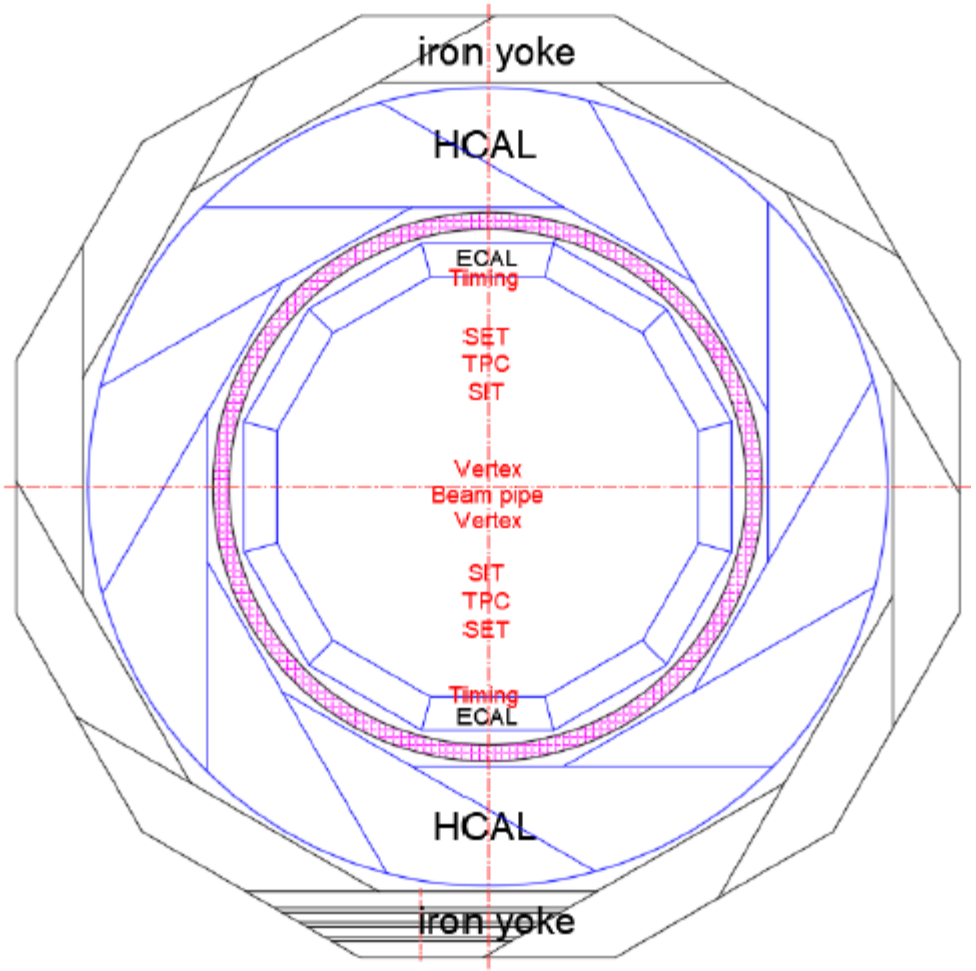
Solenoid magnet progress and plan

Superconducting magnet group

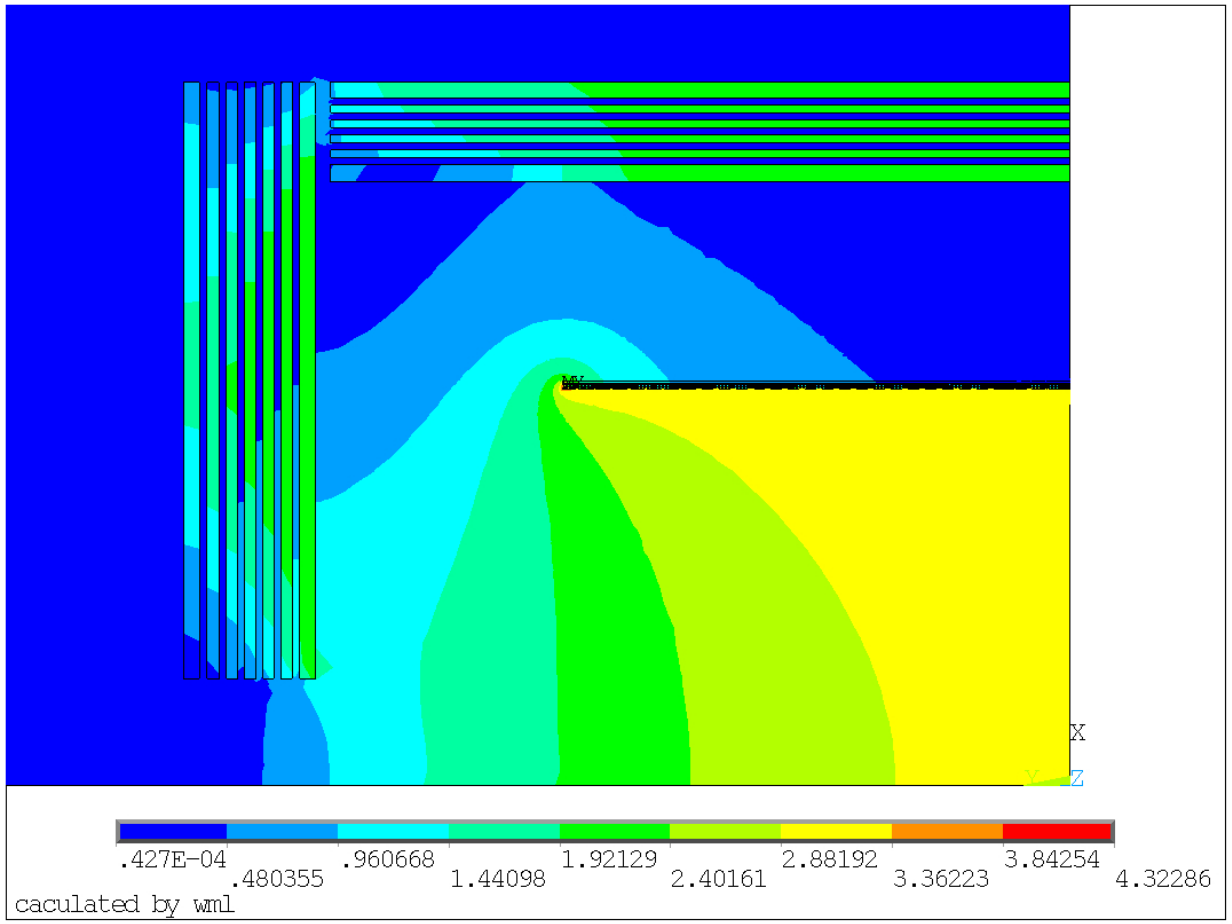
Zhao Ling/Ning Feipeng

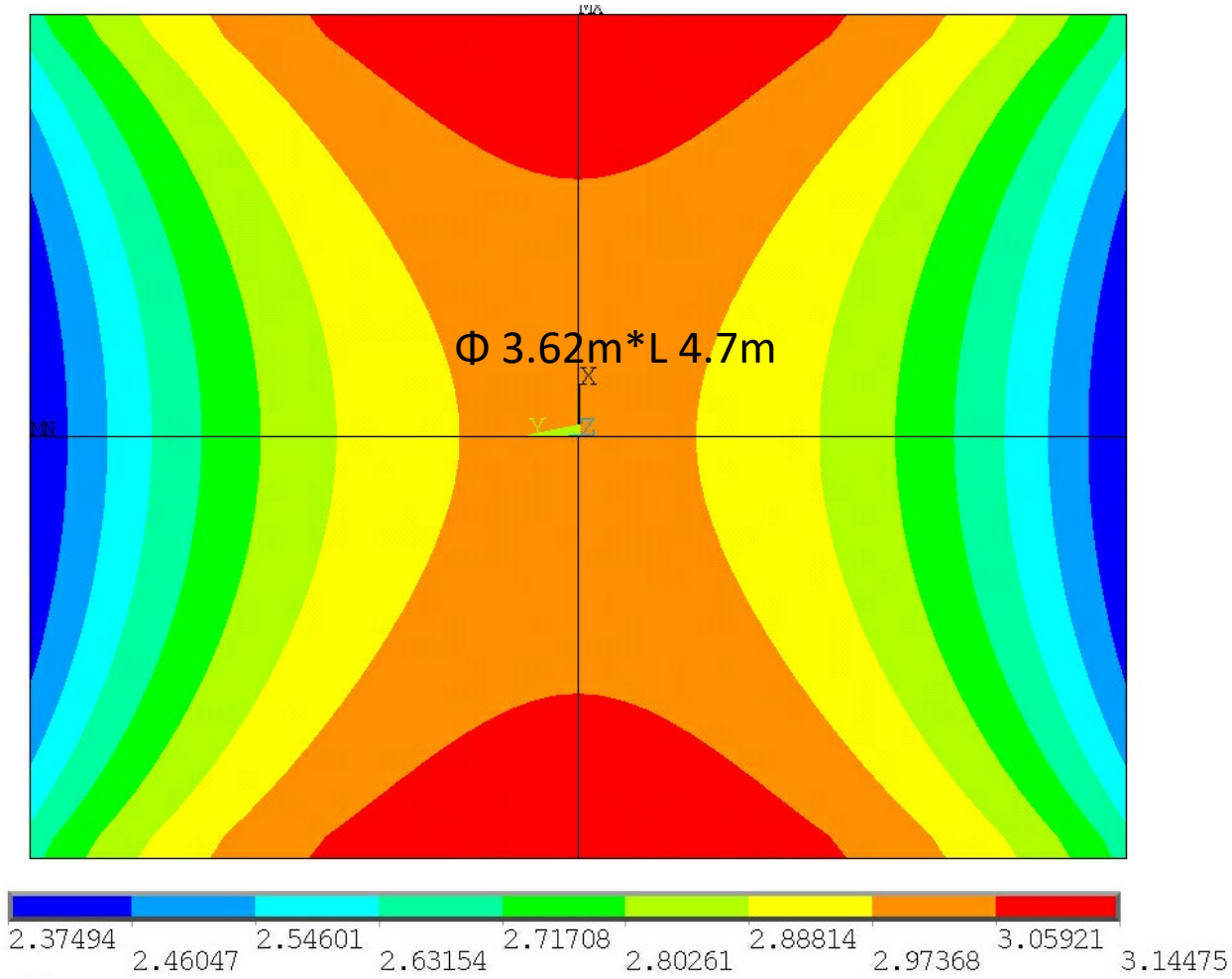
Requirement





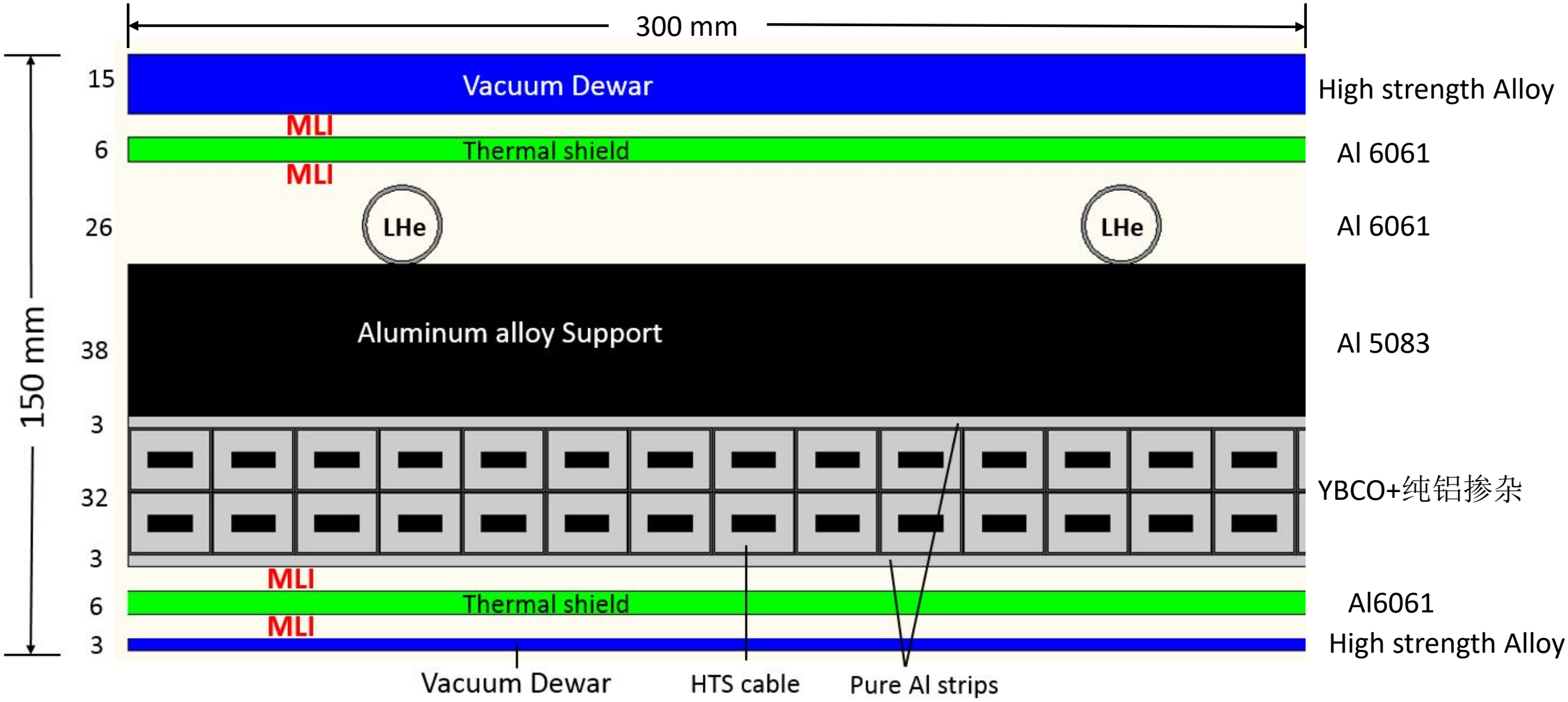
Magnetic field





Field uniformity work. Solenoid magnet is finished. Zhu Yingshun is designing the anti-solenoid magnets.

Details of superconducting coil



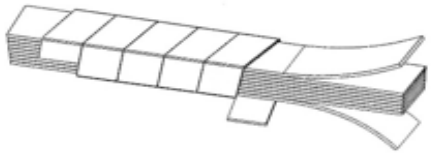
Progress

- HTS cable

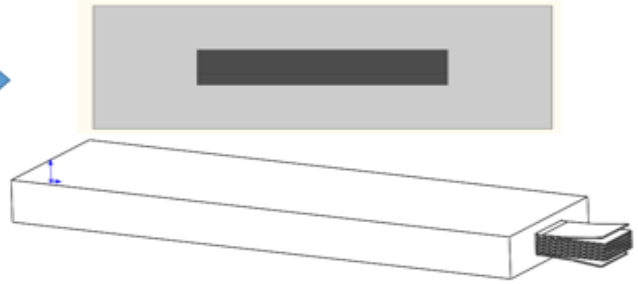
Under development

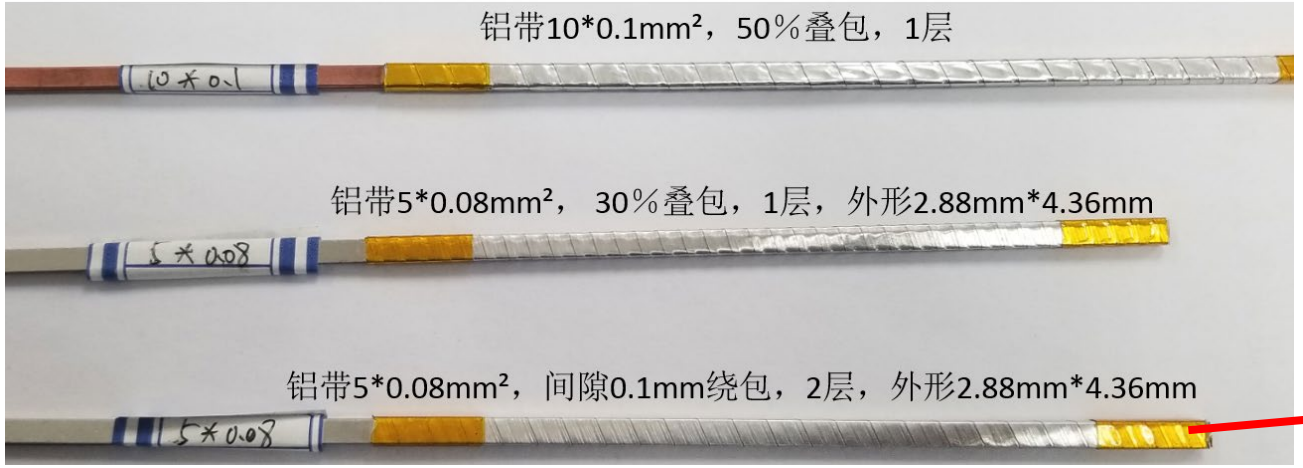
ReBCO tape

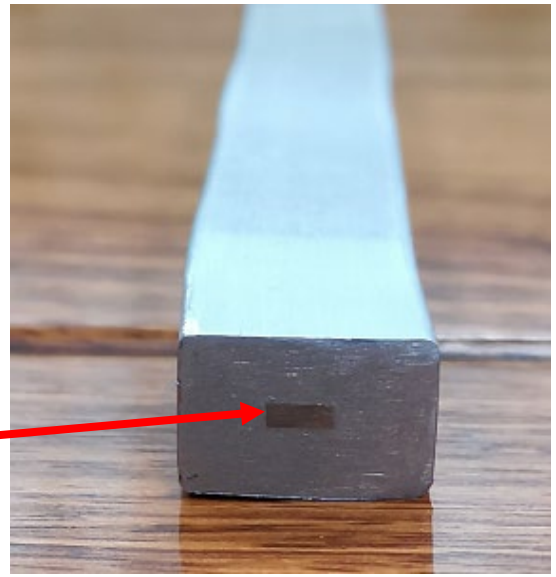
ReBCO Stack Cable



Al Stabilized ReBCO
Stacked Tape Cable







HTS cable(Al Stabilized stack Tape Cable)

Short Dummy HTS cable

The core was broken when processing the long dummy HTS cable.

We are solving this problem, adjust the machine, changing the winding material……

Progress

Under development

- LTS cable

Development of high strength aluminum alloy materials(99.996%Aluminum+0.1%Ni)(新疆众和、无锡统力):

Tensile strength is basically achieved the goal.

RRR value cannot meet the requirements(>400).

Adjust the ratio of doped elements and give the second try.

序号	铝杆状态	样品	抗拉强度	屈服强度	伸长率	室温电阻率	RRR
1	退火态（Ø9.5mm）	3#（0.1%Ni）	67/65/65	40/39/40	35/36/35	0.0263027	308
		5#（0.2%Ni）	69/69/69	41/41/42	31/31/32	0.0263532	301
2	冷加工收缩20%截面积（Ø8.5mm）	3#（0.1%Ni）	83/87/83	73/74/74	10/7/10	0.0271910	141
		5#（0.2%Ni）	87/88/88	83/85/95	8/8/8	0.0272114	181
3	人工时效处理（130度，15小时）Ø8.5mm	3#（0.1%Ni）	79/79/79	70/71/70	10/12/13	0.0271016	212
		5#（0.2%Ni）	86/85/86	79/80/82	9/10/8	0.0270946	234

Dummy conductor(56*22mm with copper cable +aluminum alloy):

The surface quality cannot meet the requirements.

The fourth try is in progress used the new Extrusion tooling.