Low-resistance Joint Development for Segment-fabrication of High-temperature Superconducting Fusion Magnets

S. Ito\textsuperscript{1}, H. Tamura\textsuperscript{2}, N. Yanagi\textsuperscript{2}, H. Hashizume\textsuperscript{1} (\textsuperscript{1}Tohoku Univ., \textsuperscript{2}NIFS)

**Requirement**
Progress in development of joint for the last decade based on joint resistivity

- Integrated joint piece + low-temp. heat treatment
- \(<3\) hours for joining process, \(\sim3\) p\(\Omega\)m\(^2\)
- Satisfy the required performance.

**Joint performance**
- Segment-fabrication of HTS helical coils
- Quality assessment
- Relationship between contact area and contact resistance based on X-ray CT scan for three joint configurations

**Integrated joint piece + low-temp. heat treatment**
- \(<3\) hours for joining process, \(\sim3\) p\(\Omega\)m\(^2\)
- Satisfy the required performance.

**Range of contact resistance can be predicted from contact area using X-ray CT scan**
- Perform quality control of the joints during fabrication process at room temperature