

AMoS: Additive Manufacturing of High-Temperature Superconductors

Enabling Future Gravitational Wave Detectors and Low Thermal Conductivity Electric Connections



Motivation and Relevance

- Increased efficiency for applications requiring cryogenic temperatures using high-temperature superconductors (YBCO)
- Limited machinability of hard and brittle YBCO is an obstacle
- Additive Manufacturing for complex shaped YBCO parts

Approach

- Powder production route was developed
- Process development for YBCO part creation using a fiber laser
- Measuring Superconductivity → Resistive characterization

Results

- Powder with superconducting properties was produced
- After production process new heat treatment is necessary to maintain superconductive properties
- Characteristic drop in resistance at ca. 90 K was observed

Research Area

- Quantum computing
- Electromagnetic actuators

Partners



Supported by



Picture



Contact



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