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## Research on fatigue characteristics of optical fiber applied in HTS cable

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Quench detection is an indispensable part of the superconducting electrical device to ensure its safe and stable operation. For HTS cables with a length of several kilometers, Distributed Temperature Sensing (DTS) based on Raman Optical Time Domain Reflection (R-OTDR) has irreplaceable capacity such as continuous spatial measurement and long sensing distance, but the optical fiber needs to endure the long-term challenge of the harsh environment to prove its reliability. In this paper, the fatigue characteristics of different types of optical fiber under long-term impact of liquid nitrogen was discussed. The fatigue characteristics was characterized by the loss value of the optical fiber and the temperature measurement was also observed as a reference basis.

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