

## Einladung zum Physikalischen Kolloquium

**06.02.2026 Tabea Arndt, Karlsruher Institut für Technologie**

**»High-Temperature Superconductors (HTS) – practical application and novel trends«**

*Einführung: J. Schmalian*

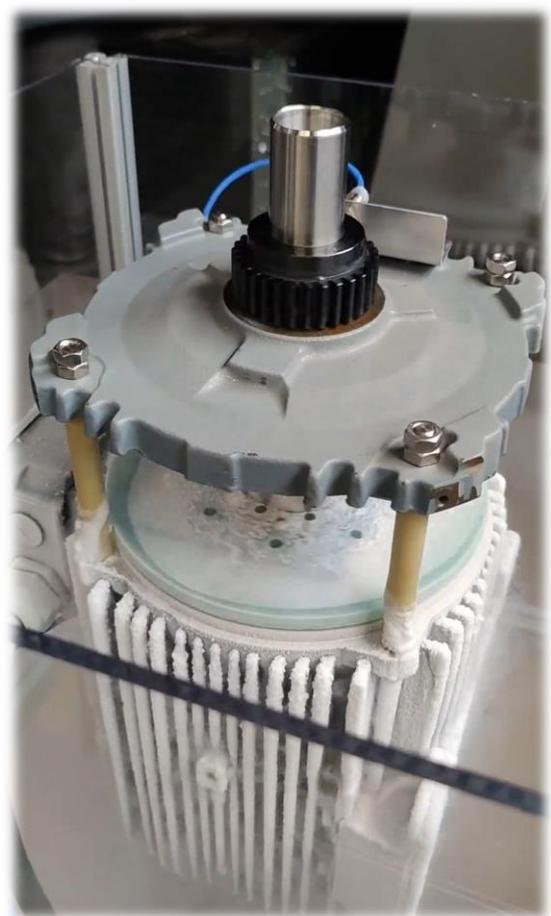
High-Temperature Superconductivity has evolved a lot in the 40 years since its discovery. Not only have the performance promises in high-temperature devices (power technology) and high-magnetic-field applications (NMR & Fusion) materialized to a considerable degree, but HTS also offers some unique features for applications never realized before.

Relevant for all applications is not only to prove technical feasibility, but to realize either performance benefits or cost parity.

The latter becomes more promising as the HTS wire today is nearly the same specific cost ( $€/(kA.m)$ ) as copper. Starting with an overview of practical superconductors, we will discuss the operational challenges and opportunities posed by HTS. Then, the new opportunities in

- non-insulated coils,
- stacked-tape windings,
- substituting conventional rotating machines, as well as
- novel electric machines will be presented.

This last section is certainly most fascinating for engineers and scientists.



*The first of its kind proof-of-concept “STAR-machine”, which can only be realized using HTS*

Der Vortrag findet **am Freitag, den 06. Februar 2026 um 15:45 Uhr im Otto-Lehmann-Hörsaal**, Physik-Flachbau (Geb. 30.22), KIT-Campus Süd statt.