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Temperature dependent pinning landscapes in REBCO thin films

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landscapes of REBCO (RE=rare earth elements) thin films have been a topic of
study in recent years due to, among other reasons, their high ability to introduce
various phases and defects. Pinning mechanisms studies in high temperature super-
conductors often require detailed knowledge of critical current density as a function
of magnetic field orientation as well as field strength and temperature. Since the
films can achieve remarkably high critical current, challenges exist in evaluating
these low temperature (down to 4.2 K) properties in high magnetic fields up to
30 T. Therefore both conventional transport, and magnetization measurements in
a vibrating coil magnetometer equipped with rotating sample platform were used
to complement the study. Our results clearly show an evolution of pinning from
strongly correlated effects seen at high temperatures to significant contributions
from dense but weak pins that thermal fluctuations render ineffective at high tem-
peratures but which become strong at lower temperatures Support for this work is
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