Flux flow in HTS and LTS high-field superconductors under strain

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We are investigating the properties of HTS and LTS high-field superconductors under strain in high magnetic fields. Our approach includes making detailed $J_c(B,T,\varepsilon_{app})$ measurements on a coated conductor REBCO tape manufactured by SuperPower and on a bronze-route Nb_3Sn wire using our bespoke probes. For LTS materials we use Walter's springs in our 15 T vertical magnet. For HTS coated conductors we measure the critical current versus uniaxial strain and temperature in our 40 mm bore world-class 15 T split-pair horizontal magnet. Recent results have been obtained that describe the variation of critical current and upper critical field with temperature (4.2 K < T < 100 K), magnetic field (0 T < B < 15 T), angle (full 360°) and uniaxial applied strain (-1.5 % < ε < +1 %). We have also completed some critical current density measurements while applying strain in two-dimensions. We will present our most interesting recent results.

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