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Progress in High-Speed Spin Testing of Superconducting Wire and Tapes for High-Field NMR Magnet Qualification

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This paper summarizes the status of a 3-year, NIH-funded research project to study the strength of high temperature superconductors under high circumferential hoop stress, in order to qualify these materials for high-field (> 1 GHz-class NMR magnets). The unique approach presented here is to spin test coils at high rotational speeds, approaching 100,000 rpm, in order to induce the necessary hoop stress. In this initial trial, short lengths of 2G YBCO thin-film tapes and reinforced Bi-2212 wires were mounted to a 75-mm diameter test rotor and spun. The results of this experiment, along with progress in building a second, higher speed rotor, are presented in this paper.

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