High Field Powered Magnets for NMR Spectroscopy

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Keck Powered Magnet

Technology Summary

Nuclear magnetic resonance (NMR) spectroscopy requires an external magnetic field, and the resolution and signal to ratio of NMR methods scale directly with the field strength of the magnet. High-field powered magnets produce significantly greater fields that currently used superconducting magnets, but temporal field fluctuations from power supply ripple and cooling water temperature variations have precluded their use in NMR. This new device and method employs a cascade feedback control system with software to reduce field fluctuations of powered magnets down to levels comparable to a persistent magnet. The technology has been used to demonstrate standard NMR spectroscopy technique in a 25T powered magnet.

Application & Market Utility

NMR spectroscopy is of central importance in chemical, biological and materials science research. This technology permits use of extremely high powered magnets in NMR spectroscopy to achieve higher resolution. It also eliminates the use of expensive liquid helium cooling in the NMR spectroscopy.

Next Steps

Seeking research collaboration and licensing opportunities.

TECHNOLOGY READINESS LEVEL 4-7

Seeking

Investment | Licensing | Research

Keywords

- NMR
- spectroscopy
- powered magnets

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