



Mag Lab World Records

Always pushing the scientific envelope, the **National High Magnetic Field Laboratory** holds numerous records for high magnetic fields and other key measures of the power and utility of the instruments at our facility. Most of the records we have established since the lab opened have been short-lived, as we are constantly surpassing them. As you can see in the table below, where some of our current records are featured, there's a very good reason why hundreds of researchers a year travel to our unique lab to use these awesome tools. For details on these records, go to www.magnet.fsu.edu/mediacenter/factsheets/records.html.

First, a few quick definitions:

- **Dalton:** Unit of molecular mass. A hydrogen atom weighs about 1 Dalton (Da)
- **Kelvin:** A temperature scale used by scientists. Zero Kelvin (0 K) is known as absolute zero, and is the equivalent of -273 degrees Celsius and -460 degrees Fahrenheit. Absolute zero is as cold as cold can get.
- **Tesla:** Measure of magnetic field strength. The Earth's magnetic field is one twenty thousandth (.00005) of a tesla (T).

Magnet Lab World Records	
Highest magnetic field for a continuous field magnet (Guinness World Record)	45 tesla
Highest field for a long-pulse magnet	60 tesla
Highest field for a non-destructive magnet	90 tesla
Highest field strength and current density for any superconducting magnet	33.8 tesla / 325 amps
Highest homogeneity of any resistive magnet	25 tesla Keck magnet
World's largest bore size for a 900 MHz NMR magnet	105 mm (about 4 inches)
Highest mass sensitivity of any probe at any frequency	600 MHz, triple-resonance probe
Smallest resolved mass difference between two molecules (achieved with our 9.4 tesla FT-ICR instrument)	0.000452 Dalton
Highest observed nuclear resonance Larmor frequency	1.9GHz Proton NMR at 44.7 tesla
Highest frequency spectrometer for pulsed Electron Paramagnetic Resonance (EPR)	336 GHz / 12 tesla
Highest field for an MRI study of a living animal	21.1 tesla (900 MHz)
Highest B/T (magnetic field / temperature) ratio for studies of electron systems in an applied field B with electronic temperature T	16.5 tesla / 0.001 Kelvin

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