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Next Generation Active Magnetic Shielding for n2EDM experiment at PSI.

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The n2EDM experiment, which is currently under construction at the Paul Scherrer Institute (PSI), is designed to improve the sensitivity of the neutron electric dipole moment by an order of magnitude.

In order to achieve this goal, it is crucial to stabilize the magnetic fields inside the precession chamber, where neutrons are stored and Ramsey measurements are performed.

For this purpose, an active magnetic shielding (AMS), which compensates the surrounding field and the occurring field changes, was designed, constructed and commissioned.

It is placed around the passive six layer mu-metal shield, on a dedicated grid spanning a volume of about 10m x 10m x 10m.

The system consists out of 55km of cables that form eight independent coils so that the three homogeneous components as well as all five linear gradients of the magnetic field can be produced.

A set of fluxgate sensors is employed to measure the magnetic field and their readings are used in a closed-loop algorithm to drive the coil currents.

In this contribution we will present the AMS system and its first performance measurements.

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