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【322】 An Active Magnetic Shield for the n2EDM Experiment - Simulation and Optimization

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The n2EDM experiment at PSI aims to improve upon the best sensitivity measurements of the neutron electric dipole moment. This requires a stable and uniform magnetic field environment. To achieve this, a large system of coils surrounding the experimental area is implemented, called the Active Magnetic Shield (AMS). The AMS is engineered to counteract magnetic disturbances via a feedback loop mechanism. This system effectively compensates static and variable fields up to the sub-hertz frequency range, with magnitudes of up to $50 \mu\text{T}$. This talk introduces the operational principle of the AMS and discusses simulations and optimizations via genetic algorithms to enhance the system's performance.

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