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Considerations for a caesium magnetometer array for the n2EDM experiment

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The search for the neutron electric dipole moment d_n , carried on by the n2EDM experiment at PSI could provide a better insight on the baryon asymmetry of the universe and/or new physics. The experimental goal to reach an order of magnitude higher sensitivity than previous efforts, means its systematic effects need to be better controlled. The appearance of a false d_n ($d_{Hg \rightarrow n}^{false}$) due to the different motional magnetic fields seen by the neutrons and Hg atoms of the comagnetometer is one of such obstacles. A Cs-Magnetometer (CsM) array is then to be built such that $\Delta d_{Hg \rightarrow n}^{false} < 4 \times 10^{-28} e.cm$. Furthermore, the presence of magnetic impurities in the apparatus perturbs the performance of the CsM array. Calculations of this effect are shown, together with the impurity criteria that would preserve the normal functioning of the array.

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