DEVELOPMENT OF ^{131}Xe COMAGNETOMETRY FOR Xe ATOMIC EDM SEARCH

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A non-zero electric dipole moment (EDM) of a particle directly violates invariance under the time *T* reversal, and hence implies the violation of the *CP*-symmetry. Since the contribution to the EDM from the Standard Model (SM) of elementary particle physics is negligibly small, a finite EDM should be a manifestation of *CP*-violating new physics beyond the SM, which is essential in explaining the matter excess in our Universe. As for the EDM in Xe atom, in order to improve the current experimental upper limit 4.1×10^{-27} *e*cm, monitoring the spin precession frequency to a nHz precision is required. For such an extreme precision measurement, we newly employ co-existing ^{129}Xe and ^{131}Xe nuclear spin masers. Since ^{129}Xe and ^{131}Xe in a gas cell sense the same magnetic field, the long-term drift in the magnetic field is cancelled out by phase comparison. Furthermore, since the two maser species have almost the same chemical properties, the frequency uncertainty due to the contact interaction between maser species and polarized Rb atoms can largely be suppressed, which is a clear advantage of a ^{131}Xe comagnetometer over others such as a ^{3}He one. Recently, we have succeeded in operating an external-feedback spin maser of ^{131}Xe (I=3/2) for the first time. In this presentation, the current status of development and results for the long-term stability of the Xe masers will be reported.