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Systematic and Operational study apparatus for nEDM@SNS

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nEDM @SNS experiment is designed to be able to measure neutron EDM down to 10^{-28} range due to special technique for suppressing systematic effect arising from magnetic field gradients in presence of electric field. This technique requires cryogenic environment at about 0.5K and use of polarized ^3He in the same cell as trapped neutrons. We also plan to utilize simultaneous spin dressing technique for both, neutron and ^3He, to increase statistical sensitivity. To accelerate commissioning of the main nEDM experiment with turn around on the scale of month, we have designed a smaller apparatus, without electric field and with turn around about a week, which can be used to develop operational technique for spin manipulations at cryogenic environments as well as characterization of the systematic effect. At present we have completed commissioning of the new non-magnetic dewar and are assembling and testing cryogenic essentials of the apparatus.

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