# Frequency Domain Method of search for the deuteron electric dipole moment

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We propose a method which aims at solving the geometric phase [1, p. 6] and machine imperfection [2, pp. 10, 11] systematic errors, encountered in any Frozen Spin Storage Ring EDM measurement method based on observation of a slow, gradual change in the beam polarization vector.

Geometric phase can be handled by dispensing with operation in the spin resonance (i.e., 3D Frozen Spin) state, in favor of the 2D FS state, generated by a Spin Wheel. [3, p. 1963] In order to eliminate the machine imperfection systematic error, we propose to utilize the imperfection fields themselves as a spin wheel.

Our method is intended for a combined storage ring (bend fields are magnetic). Flipping of the spin wheel roll direction required by the SW methodology is executed via reversing the guide field polarity. [4] [5] Control of its roll rate is achieved via observation of the polarization precession frequency in the horizontal (closed orbit) plane. [4]

In more detail, the method is described in [6] [7].

## References

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