Contribution submission to the conference Wuppertal 2015

Towards JEDI@COSY: systematic studies of spin dynamics in preparation for the EDM searches — •Artem Saleev[1,3], Nikolay Nikolaev[2], and Frank Rathmann[1] for the JEDI-Collaboration — [1]Institut für Kernphysik, Forschungszentrum Jülich, Deutschland — [2]Landau Institute for Theoretical Physics, Chernogolovka, Russia — [3]Samara State University, Samara, Russia

According to BMT equation, the EDM spin rotation in a storage ring is proportional to the bending Lorentz force. The troubling issue is that the so-called imperfection, radial and longitudinal, B-fields abound in the ring. The MDM rotation in the imperfection fields emerges as a background to the expected much weaker EDM rotation. One of the most precise quantities measured presently at COSY at 10^{-10} level is a spin tune. To study the systematic effects from the imperfection fields at COSY we proposed the original method which makes use of the two static solenoids acting as artificial imperfections. The emerging spin tune mapping, the measurements of the spin tune with respect to the strength of the solenoid's field, gives an access to the ring imperfections, and has been successfully tested in the JEDI September 2014 run at COSY.

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