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Title Development of new Beam Position Monitors at COSY

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Abstract Electric Dipole Moments (EDM) violate parity and time reversal symmetries. Assuming the CPT-theorem, this leads to CP violation, which is needed to explain the matter over antimatter dominance in the Universe. Thus, a non-zero EDM is a hint to new physics beyond the Standard Model. The JEDI collaboration (Jülich Electric Dipole moment Investigations) has started investigations of a direct EDM measurement of protons and deuterons at a storage ring. To measure a tiny EDM signal with high precision, systematic effects have to be controlled to the same level. One way of controlling systematic effects is the use of new Beam Position Monitors. The idea is based on the usage of magnetic pick-ups in a Rogowski coil configuration. The main advantage of the coil design is the high response to a high frequency signal, the particle bunch frequency, and the compactness of the coil itself. In a first step the BPMs will be benchmarked in a laboratory test system. In the next step the calibrated BPMs will be installed and tested at the conventional storage ring COSY (Cooler Synchrotron) at Jülich. At the conference first measurement results and the upcoming developments will be presented.

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Footnote

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