

# Rogowski-based beam position monitors for storage rings

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## Abstract

The Electric Dipole Moment (EDM) of elementary particles has gained a big interest in particle physics for the fact that it violates Charge Parity ( $\mathcal{CP}$ ) symmetry. The standard model lacks additional  $\mathcal{CP}$  violating phenomenons to explain the matter-antimatter asymmetry. The Jülich Electric Dipole moment Investigations (*JEDI*) collaboration is preparing for measuring the EDM of charged hadrons (protons and deuterons) using the Cooler Synchrotron (COSY) storage ring. The search for an EDM requires highly precise measurement conditions. This comes from theoretical predictions, the strength of the EDM signal is so tiny that it can be easily mimicked by other effects. For this, it is necessary to disentangle a real EDM signal from systematic ones. The beam orbit is one of the important things that needs to be well known and controlled. The beam position monitors (BPMs) are used to deliver the transverse beam positions. The Rogowski coil operation, which is based on magnetic induction is exploited in a compact and sensitive position monitor for storage rings. This poster will present the working principles and the latest achievements of the Rogowski-based beam position monitor used at COSY.

## Keywords

Rogowski, BPM, Storage rings, EDM