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Accessing Interior Vector Magnetic Field Components in Neutron EDM Experiments via Boundary Value Techniques[1] BRAD PLASTER, University of Kentucky — We propose a new technique for the determination and monitoring of the interior vector magnetic field components during the operation of neutron EDM experiments. If a suitable three-dimensional volume surrounding the fiducial volume of an experiment can be defined which contains no interior currents or magnetization, each of the interior vector field components will satisfy the Laplace Equation within this volume. Therefore, if the field components can be measured on the boundary, the interior vector field components can be determined uniquely via numerical solution of the Laplace Equation. We discuss the applicability of this technique to the determination of the magnetic field components and magnetic field gradients in the fiducial volumes of neutron EDM experiments.

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