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TITLE: The Search for an Electric Dipole Moment of the Neutron

**ABSTRACT:**

Measurements of particle electric-dipole moments (EDMs) are of significant interest because they provide some of the tightest constraints on extensions to the Standard Model, such as supersymmetry, that attempt to explain the mechanisms underlying CP violation. For more than half a century, physicists have been closely scrutinising the electrically neutral constituent of the nucleus, the neutron, in an attempt to establish whether there is a slight difference in the average distribution of positive and negative charge within its structure – an electric dipole moment (EDM). At the ILL in Grenoble, a neutron-EDM experiment is being carried out, previously using neutrons in a room temperature apparatus and setting most stringent limits – and more recently using a method involving the creation and measurement of neutrons in superfluid helium. Fundamental principles, the experimental techniques involved and the recent migration to the cryogenic experiment are presented and discussed.