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43 - A Stern-Gerlach separator of chiral enantiomers based on the Casimir-Polder potential

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We propose a method to separate enantiomers using parity violation in the Casimir-Polder potential between chiral mirrors and chiral molecules. The proposed setup involves a molecular beam composed of chiral molecules passing through a planar cavity consisting of two chiral mirrors. Enantiomers of opposite handedness are deflected differently due to a chiral dependence of the Casimir-Polder potential resulting in the separation of the enantiomers. Our setup provides an alternative experimental tool for enantiomer separation, as well as shedding light on the fundamental properties of the Casimir-Polder potential.

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