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Renormalization Effects on Electric Dipole Moments in Electroweakly Interacting Massive Particle Models

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We study the renormalization effects on electric dipole moments in the models with new electroweakly interacting massive fermions. The electric dipole moments are generated by the effective operators which arise from integrating out heavy particles at some scale in the models. We give the renormalization group equation for the Wilson coefficients of the effective operators from the scale where the operators are generated to the electroweak scale. Our numerical studies focus on the electric dipole moments in the mini-split supersymmetric scenario and the electroweakly interacting massive particle dark matter scenario. It turns out that the renormalization effects can give an enhancement factor being of the order of O(10)% in the mini-split scenario and being more than two in the minimal dark matter model.

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