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CP Violation from Finite Groups

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The difficulties one faces when implementing CP transformations in the presence of finite non-abelian symmetries are reviewed. It is then shown that physical CP transformations in such settings always correspond to class-inverting automorphisms of the finite group and their connection to the existence of bases with real Clebsch-Gordan coefficients is explored. Furthermore, the finite groups are categorised into three classes according to their possible CP transformations. In particular, it is shown that there are groups which do not admit physical CP transformations in generic settings and, therefore, necessarily break CP.

Primary authors: Mr TRAUTNER, Andreas (Technische Universität München, Physik-Department T30e); Prof. MAHANTHAPPA, K. T. (University of Colorado, Boulder); Mr FALLBACHER, Maximilian (Technische Universität München, Physik-Department T30e); Prof. RATZ, Michael (Technische Universität München, Physik-Department T30e); Prof. CHEN, Mu-Chun (University of California, Irvine)

Presenter: Mr FALLBACHER, Maximilian (Technische Universität München, Physik-Department T30e)

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