

An introduction to non-abelian discrete symmetries for particle physicists

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Abstrak

These lecture notes provide a tutorial review of non-Abelian discrete groups and show some applications to issues in physics where discrete symmetries constitute an important principle for model building in particle physics. While Abelian discrete symmetries are often imposed in order to control couplings for particle physics, in particular model building beyond the standard model - non-Abelian discrete symmetries have been applied to understand the three-generation flavor structure in particular. This text explicitly introduces and studies the group-theoretical aspects of many concrete groups and shows how to derive conjugacy classes, characters, representations, and tensor products for these groups (with a finite number) when algebraic relations are given, thereby enabling readers to apply this to other groups of interest.