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Metaplectic Flavor Symmetries from Magnetized Torus

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Despite of the successful predictions of the Standard model, some of the parameters from the flavor sector, e.g. the mixing angles and the and CP phases, do not have an origin within the model. It has been proposed to use modular flavor symmetries to solve this issue, either by imposing them or deriving them from an underlying theory. In this work, we derive the modular symmetries by using the Yukawa couplings given by a magnetized compactified torus. We show that modular transformations of torus give rise to finite metaplectic groups, whose order is determined by the least common multiple of the number of flavors involved. We also comment on the role of supersymmetry in these constructions and outline a path towards non–supersymmetric models with modular flavor symmetries.

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Primary author: KNAPP-PEREZ, Victor (UNAM)

Presenter: KNAPP-PEREZ, Victor (UNAM)

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