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A Supersymmetric Flavor Clockwork

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Clockwork models can explain the flavor hierarchies in the Standard Model quark and lepton spectrum. We construct supersymmetric versions of such flavor clockwork models. The zero modes of the clockwork are identified with the fermions and sfermions of the Minimal Supersymmetric Standard Model. In addition to generating a hierarchical fermion spectrum, the clockwork also predicts a specific flavor structure for the soft SUSY breaking sfermion masses. We find sizeable flavor mixing among first and second generation squarks. Constraints from Kaon oscillations require the masses of either squarks or gluinos to be above a scale of ˜3 PeV.

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Primary authors: GADAM, Sri Aditya (University of California, Santa Cruz); ALTMANNSHOFER, Wolfgang (UC Santa Cruz)

Presenter: GADAM, Sri Aditya (University of California, Santa Cruz)

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