Contribution ID: **10** Type: **not specified**

# A. Wingerter: "Orbifolds, the Standard Model, and Unification"

*Wednesday 30 July 2008 10:00 (30 minutes)*

We first highlight some of the (theoretical) shortcomings of the Standard Model, and then consider hints at physics beyond the electroweak scale. Grand Unification and theories in extra dimensions are motivated, and string orbifolds are introduced as ultraviolet completions of these theories. We present a general search strategy for MSSM-like models based on a local SO(10) Grand Unified Theory. The results of our search include 15 models with (i) 3 families of quarks and leptons, (ii) only vectorlike exotics that decouple along D- and F-flat directions, (iii) an exact R-parity, (iv) non-trivial Yukawa matrices, (v) mass hierarchies. Going beyond the "mini-landscape", we answer the question whether the requirement of 3 generations necessarily implies an SO(10) structure. We investigate whether the low-energy values of the coupling constants are compatible with gauge coupling/gravity unification in the heterotic orbifold setup. [Based on arXiv:0706.0217, arXiv:0708.2691, arXiv:0710.4924, arXiv:0805.4186]

**Track Classification:** W2