

Abstract Submitted
for the TSF07 Meeting of
The American Physical Society

Systematic Statistical Study of NAHE Based String Models TIM
RENNER, Baylor University, JARED GREENWALD, Brigham Young University,
GERALD CLEAVER, Baylor University — We are conducting a systematic study
of the phenomenological properties of models on the region of the string landscape
occupied by weak coupled heterotic strings in the free fermionic formalism. Specif-
ically, we are examining the statistics of phenomenological properties, including of
the superpotential, of the collection of models formed as extensions of the Nanopou-
los, Antoniadis, Hagelin, and Ellis (NAHE) set of free fermionic basis vectors. The
NAHE observable gauge group is $SO(10)$ with $N=1$ supersymmetry. We sys-
tematically generate all possible sets of free fermionic basis vector extensions to the
NAHE set that reduce the $SO(10)$ model to Flipped $SU(5)$ models, Left-Right Sym-
metric (Pati-Salam-like) models, and MSSM-like models. (Several of such models
have been constructed and studied individually by various research groups in the
past.) All possible order-2 through order-4 basis vector extensions consistent with
 $SO(10)$ breaking and modular invariance were constructed as part of a 2007 REU
summer project with graduate students at Baylor University. Systematic generation
and statistics collection of the related models has begun. Generation of additional
higher order basis vector extensions is in process.

Tim Renner
Baylor University

Date submitted: 05 Oct 2007

Electronic form version 1.4