

MASS WITHOUT SCALARS

S. Dimopoulos

Physics Department, Columbia Univ., NY, USA.

ABSTRACT

It is argued that realistic fermion and vector boson masses can arise in theories without fundamental scalars. The scalars are replaced by new strong gauge groups and "heavy" fermions with masses of the order of 1 TeV and 100 TeV. In such models the strong CP problem is solved and a naturally small CP violation can be introduced.

These models are very natural in the sense that physics at large distances ($> 10^{-17}$ cm) does not sensitively depend on minute details of the bare physics at small distances ($< 10^{-28}$ cm). The chief disadvantage is the epicyclic proliferation of new gauge groups.