

# BEYOND THE STANDARD MODEL

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STUDENT TALKS: 20.2. or 27.2.2017

## TOPICS

- **Gauge anomalies and how they cancel in the SM**

C. Bouchiat, J. Iliopoulos and P. Meyer: *An Anomaly Free Version of Weinberg's Model*, Phys. Lett. **38B**, 519 (1972). + modern textbooks

- **Perturbative unitarity**

– Benjamin W. Lee, C. Quigg, H.B. Thacker: *Weak Interactions at Very High-Energies: The Role of the Higgs Boson Mass*, Phys.Rev. **D16** (1977) 1519

- **Quadratic divergences in the Higgs radiative corrections**

– E. Gildener: *Gauge Symmetry Hierarchies*, Phys. Rev. **D14** (1976) 1667

- **Radiative EW symmetry breaking in SUSY**

– L. E. Ibanez and G. G. Ross:  *$SU(2)_L \times U(1)$  Symmetry Breaking as a Radiative Effect of Supersymmetry Breaking in GUTs*, Phys. Lett. **110B** (1982) 215

- **Dynamics of EW phase transition**

– Greg W. Anderson, Lawrence J. Hall: *The Electroweak phase transition and baryogenesis*, Phys.Rev. **D45** (1992) 2685-2698

- **Pati-Salam GUT model**

– J.C. Pati and A. Salam: *Lepton Number as the Fourth Color*, Phys. Rev. **D10** (1974) 275, Erratum: [Phys. Rev. D **11** (1975) 703] + modern textbooks

- **$SO(10)$  GUT model**

– H. Fritzsch and P. Minkowski: *Unified Interactions of Leptons and Hadrons*, Annals Phys. **93** (1975) 193 + modern textbooks

- **Seesaw mechanism and neutrino masses**

– R.N. Mohapatra and G. Senjanovic: *Neutrino Mass and Spontaneous Parity Violation*, Phys. Rev. Lett. **44** (1980) 912 + many summer school lectures (e.g. TASI)

- **Twin Higgs models**

– Z. Chacko, H. S. Goh and R. Harnik: *A Twin Higgs model from left-right symmetry*, JHEP **0601** (2006) 108; *The Twin Higgs: Natural electroweak breaking from mirror symmetry*, Phys. Rev. Lett. **96** (2006) 231802

- **Natural SUSY**

– M. Papucci, J.T. Ruderman and A. Weiler, *Natural SUSY Endures*, JHEP **1209** (2012) 035