

PAUL SCHERRER INSTITUT



# Particle Theory Seminar

**A. von Manteuffel**

*Universität Heidelberg*

“Determining the global minimum of extended Higgs potentials”

**Monday (!), December 10, 2007, 11:30**

**Auditorium (WHGA/001)**

## **Abstract:**

For more involved Higgs potentials as in the NMSSM, an unambiguous determination of the global minimum is non-trivial already at the tree-level.

I will discuss a geometrical view on the general two-Higgs-doublet model, leading to simple criteria for its stability, electroweak symmetry breaking and CP properties. This includes a note on a new type of generalised CP symmetry with some interesting features.

After a short introduction to Groebner bases I will demonstrate how they can be employed to determine the global minimum of the NMSSM Higgs potential at the tree level. Requiring the vacuum to be the global minimum rules out substantial parts of the NMSSM parameter space. Furthermore, often used partial checks turn out to be insufficient in the general case.