New Physics Directions in the LHC era and beyond



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Domain Walls in extended Higgs sectors

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In several models of extended Higgs sectors discrete symmetries play an important role. For instance, in order to avoid flavor changing neutral currents, a discrete Z2 symmetry is imposed on Two-Higgs-Doublet-Models. This can lead to the formation of domain walls as the Z2 symmetry gets spontaneously broken during electroweak symmetry breaking in the early universe. In this case, where the disconnected sectors of the vacuum manifold are 3-Spheres, the domain walls can have non-trivial structures localized inside their core.

In this talk, I discuss the possibility of having electric charge breaking and CP-violating vacua localized inside the domain walls. I also discuss the possibility of inducing electroweak symmetry restoration inside the domain walls in the case of next-to-two Higgs doublet models.

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