

Topological Defects and Extra Dimensions

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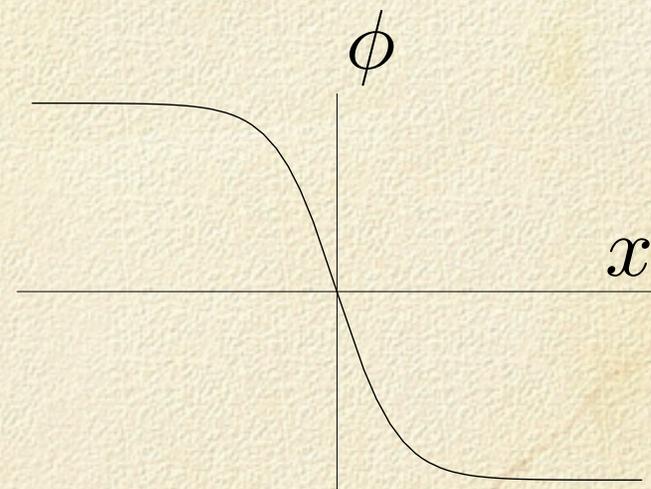
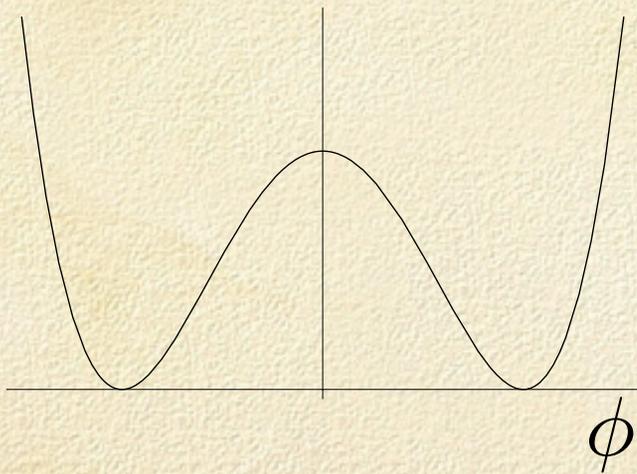
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Intro/Outline/Summary

- Topological Defects important for particle cosmology
- Extra-dimensional models have boundary localized symmetry breaking
- New structure and masses
- Remaining questions

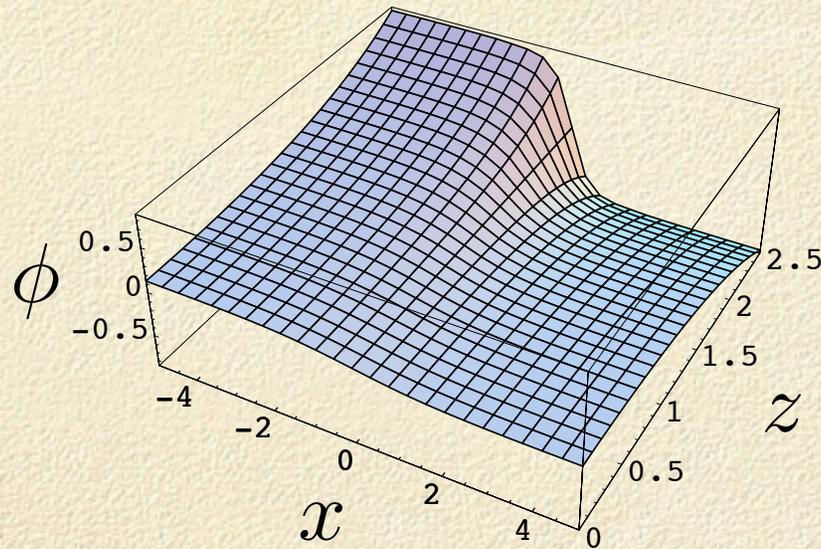
Z₂ Sym. & Domain Walls

$$V(\phi) = \lambda (\phi^2 - v^2)^2$$



Add an Extra Dimension

$$V_2(\phi) = m^2 \phi^2 + \delta(z - L)V(\phi)$$

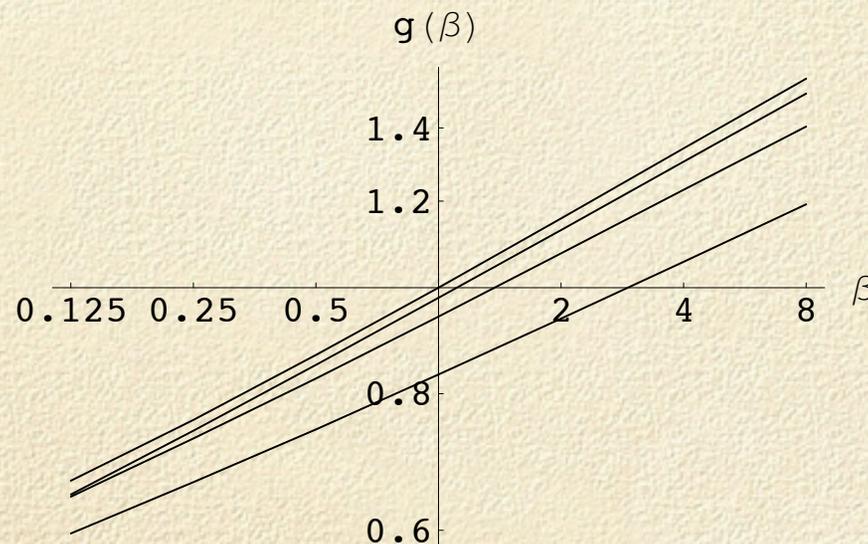


Modified Mass Scale

- At low energy, the theory looks 4-dimensional
- The 4-d effective theory has defects
- Effective theory predicts wrong defect mass
- (the homogeneous and the defect solutions sample the extra dimension in different ways)

Gauge String Tension

- String tension as a function of Higgs self-coupling to charge ratio: $\beta \equiv \frac{\lambda}{2e^2}$



Open Questions Remain

- Do warped extra dimensions dramatically change the mass scales?
- Does Sphaleron mass change modify EWBG?
- Does inter-commutation probability change?
- Do non-Abelian Higgsless models have new defect structures?