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Composite Scalars with a Compact Extra Dimension

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We study the low-energy effects of a 4 fermion operator in a 5-dimensional space-time with a single compactified extra dimension. Quantum effects due to fermion loops renormalize the theory, and lead to dynamical scalar degrees of freedom which can be considered to be bound states of 5-dimensional fermions. For critical values of the 4-fermion coupling, these bound states can condense, breaking the chiral symmetries of the theory. We consider application to extra-dimensional models of electroweak symmetry breaking.

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