

universität**bonn**



Bethe Colloquium

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Berkeley / Tokyo

New Developments on Spontaneous Symmetry Breaking: universal theme to all physics

The concept of spontaneous symmetry breaking was developed by a group of outstanding physicists including both condensed matter and particle physicists. Every textbook on Quantum Field Theory quotes the Goldstone's theorem, which states that there are $\dim(G/H)$ gapless excitations when the symmetry group G of the Hamiltonian is spontaneously broken with only its subgroup H respected by the ground state. It has been known for more than half a century that this "theorem" doesn't work in a simple piece of magnet on the fridge. I discuss how the "theorem" is generalized when applied to systems without Lorentz invariance, and a deep mathematical structure behind it called pre-symplectic structure on homogeneous spaces. I will also discuss applications of the newly developed framework to spacetime symmetries, skyrmions, etc.

Lecture Hall 1

Physikalisches Institut - Nussallee 12 - 53115 Bonn

Thursday, 3rd May, 2018, at 16 c.t.

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