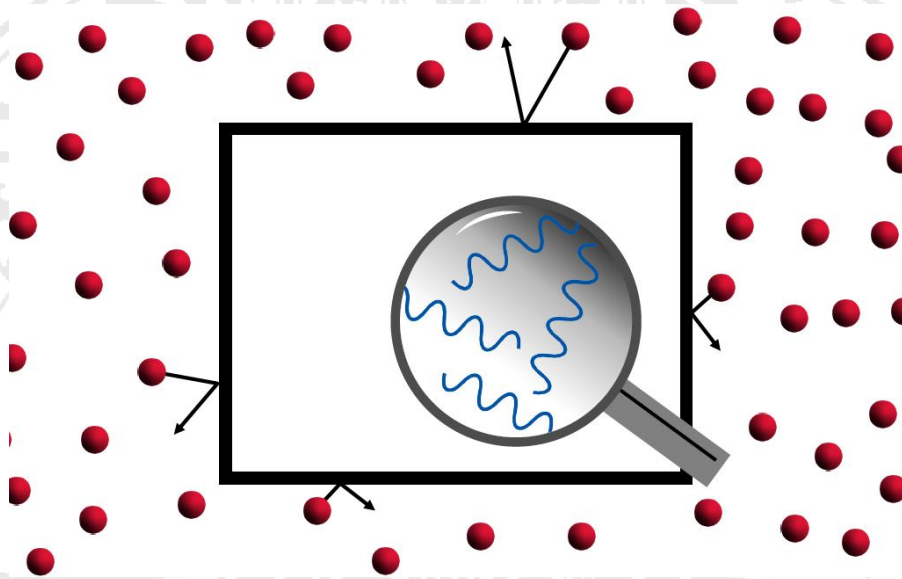


PHYSIKALISCHES KOLLOQUIUM

AM 18. NOVEMBER 2019 UM 17 UHR C.T.

IM GROßEN HÖRSAAL



THINKING ABOUT NOTHING: INTERPRETATIONS OF THE QUANTUM VACUUM

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A fundamental debate throughout the history of science concerns the (im)possibility of truly empty space. Nowhere is this more evident than in quantum mechanics and quantum field theory, where the vacuum state is often envisaged as a bubbling sea of short-lived fluctuations. The (indirect) consequences of this are very well known, having been measured more precisely than any other physical quantity. Some recent experiments aim to directly observe the fluctuating electromagnetic vacuum field, and have reported positive results. In this colloquium I will give an account of the subtleties that must be appreciated when dealing with vacuum fluctuations, and show that after a century of quantum mechanics we are not necessarily any closer to an ontology of empty space.