



ICTP | International Centre for Theoretical Physics
SAIFR | South American Institute for Fundamental Research

Campus of IFT-UNESP - São Paulo, Brazil

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THE HOLOGRAPHY OF SOLITONS



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The simplest example to model an extra dimension is the Kaluza-Klein vacuum (1926), which is just Minkowski spacetime plus an extra spacelike circle. The main objective of these lectures is to discuss non-perturbative aspects of gauge theories due to the presence of this extra dimension using holography.

Holography is a remarkable technique which allows us to compute observables of a QFT using techniques typically associated with General Relativity. This set of introductory lectures intend to show how to do this working on the Kaluza-Klein vacuum. We will start discussing what is well-known (circa 1970) of a weakly coupled QFT in this spacetime and discuss the development (circa 1999) on how to go to strong coupling using holography. Hence, no previous knowledge of QFT in curved backgrounds is required.

Then we will discuss the new developments (circa 2021-2024) that allow us to describe the phase space of the strongly coupled QFT on this Kaluza-Klein vacuum. We will end the lectures discussing some open problems in the field.

There is no registration.

More information:

www.ictp-saifr.org/solitons2024



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