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

INSTITUTO PRINCIPIA

SIMONS COLLABORATIONS: BOOTSTRAP 2023

June 26 – July 14, 2023

at Principia Institute, São Paulo, Brazil

SIMONS COLLABORATION PRINCIPAL INVESTIGATORS

Christopher Beem (Oxford U., UK)
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Quantum field theory (QFT) is a universal language for theoretical physics, describing the Standard Model, gravity, early universe inflation, and condensed matter phenomena such as phase transitions, superconductors, and quantum Hall fluids. A triumph of 20th century physics was to understand weakly coupled QFTs: theories whose interactions can be treated as small perturbations of otherwise freely moving particles. However, weakly coupled QFTs represent a tiny island in an ocean of possibilities. They cannot capture many of the most interesting and important physical phenomena, from the strong nuclear force to high temperature superconductivity.

The critical challenge for the 21st century is to understand and solve strongly coupled QFTs. The Bootstrap collaboration tackles this critical problem from a myriad of different rigorous perspectives, consistency with general principles of symmetry and quantum mechanics being the central theme.

In this 3 week program, lectures and courses will occupy the mornings and the afternoons will be reserved for free discussions and spontaneously organized presentations.

Simons Collaborations, made possible by support from the Simons Foundation, bring together groups of outstanding scientists to address mathematical or theoretical topics of fundamental scientific importance in which a significant new development has created a novel area for exploration or provided a new direction for progress in an established field.

More information:
https://exact.ictp-saifr.org/

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LOCAL ORGANIZERS

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