

# New Horizons Solvay Lectures



## Professor Zohar Komargodski

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### BIO:

Born in the USSR (Ukraine) in 1983, Prof. Zohar Komargodski earned his BSc in physics and mathematics from Tel Aviv University in 2004. He conducted his graduate studies in physics at the Weizmann Institute, earning an MSc in 2006 and a PhD in 2008. After carrying postdoctoral research at the Institute for Advanced Study in Princeton, where he was accepted as a long term member, Prof. Komargodski joined the faculty of the Weizmann Institute in March of 2011. In March of 2017, he became a Permanent Member of the Simons Center for Geometry and Physics at the University of Stony Brook.

Prof. Komargodski conducts research in theoretical high-energy physics, where he made central contributions to Quantum Field Theory, Conformal Symmetry, Supersymmetry, Quantum Gravity, and Particle Physics Phenomenology. He is the recipient of a number of prestigious fellowships and awards, including the New Horizons in Physics Prize in 2012, the Gribov Medal, for outstanding work by a young physicist in Theoretical Particle Physics and/or Field Theory in 2013, and the Philippe Meyer Prize in Theoretical Physics in 2014.

## USING TOPOLOGY TO SOLVE STRONGLY COUPLED QUANTUM FIELD THEORIES

**ABSTRACT:** I will begin by describing an interacting model in Quantum Mechanics where exact results about the ground state can be established by using tools from topology. I will then argue that such tools are also useful for tackling interesting problems in Quantum Field Theory. In particular, I will review Yang-Mills theory and argue that using topology one can make several predictions about its possible phases. We will then also extend the considerations to Quantum Chromodynamics and discuss possible connections with particle physics phenomenology and with condensed matter physics.

**Tuesday 16 October 2018 at 4.00 P.M.**

**Drinks will be served at 5:00 p.m. in front of the Solvay Room**

SOLVAY ROOM

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