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Public lecture "The physics garage: From string theory to pandemics"

Tuesday, 19 October 2021 18:00 (1 hour)

The Standard Model of particle interactions is an extremely successful theory of nature. It describes the electric, magnetic, weak and strong forces of nature. It fails however to take into account dark matter and can't even explain why matter wins over antimatter. Last but not least the Standard Model does not take into account quantum gravity. It must therefore be extended. But what are the possible constraints coming from embedding the extension of the Standard Model in a consistent theory of quantum gravity? We will use string theory, as quantum gravity template, to deduce a number of conjectures and conditions on the type of extensions allowed for the Standard Model. This is the Swampland program. What is even more exciting is that the same physics underlying the fundamental forces of nature can be used to rationalize our understanding of infectious disease spreading and even help rationalizing virus mutations with impact on several realms of scientific enquiry.

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