LAUDATIO
to professor Edward Witten

Highly esteemed
Minister of Culture, Rector of Riga Technical University,
President and other representatives of World Cultural Council, excellencies,
Professor Witten, colleagues, ladies and gentlemen!

Albert Einstein World Award of Science since 1984 has been granted by World Cultural Council every year to the most distinguished scientists who have given fundamental contribution to science and technology. **Professor Edward Witten**, Charles Simonyi Professor, Institute for Advanced Study, Princeton, New Jersey, USA, has been selected as the winner of this award in this year for his visionary research work affecting our understanding of ALL physical interactions.
Professor E.Witten was born in 1951 in the family of physics professor in Baltimore, Maryland, USA. Witten studied at Brandeis University and received his B.A. in 1971.- Interestingly, not in physics or mathematics, but in history and linguistics. From there he went to Princeton receiving his M.A. in 1974 and his Ph.D. in 1976 in physics.

> Basically E.Witten is a mathematical physicist. His major contributions are in string theory (ST), membrane theory (shortly M-theory) and also in pure mathematics. ST is a very broad subject incorporating gravity and quantum mechanics. Well known Standard Model of particles also emerges from ST and E.Witten has numerous results in it.

E.Witten was at the top of the first superstring revolution when he together with coworkers has shown that superstrings should be considered in 10D spacetime where additional 6 dimensions are curled in so-called Calabi-Yau manifold. In 1995, E.Witten initiated the second superstring revolution resolving the problem of five existing string theories. He showed that all of them are actually different parts of a single M-theory. M-theory is now the leading candidate for theory of everything.

Professor Witten's contributions to mathematics have also been noteworthy. He is known, among other things, for his novel approaches to Morse theory, the Jones polynomial, for his work on the intersection theory in moduli spaces and on the Seiberg-Witten invariants. In his study of different areas of theoretical physics, Witten

has achieved a level of mathematics which in 1990 has led him to the **highest** award in mathematics, namely a Fields Medal.

Prof. E.Witten has made a contribution also to the concept of holography. This is important for me as for a physicist applying holography in material physics. In 1990, Dutch physicist Gerard t'Hooft proposed the Holographic Principle, which states that the world is a kind of quantum hologram at the boundaries of space. However, it was not widely accepted until it has first demonstrated its usefulness and until finally in 1997 E.Witten approved the Holographic Principle in his paper "Anti De Sitter Space and Holography". Since then the Holographic Principle has become one of the cornestones of modern theoretical physics.

In his well-known book "The Elegant Universe" Brian Green has written: "Edward Witten is widely regarded as Einstein's successor in the role of the world's greatest living scientist". I have tried to show in my Laudatio that this is indeed the case.

Thank you!

Now, please, show the VIDEO about Edward Witten so that we can obtain a deeper impression about him and his scientific work.