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(I) New Directions for Dark Matter

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The identity of dark matter remains a mystery, despite decades of theorizing and detection efforts. This includes the mechanism for its primordial production, its interactions of with itself and with visible matter, and the very nature of dark matter, which could range from a Bose-Einstein Condensate, to Black Holes, to a traditional particle. In this talk I will discuss new directions for dark matter theory and how to experimentally test these ideas. I will focus on two examples, one wherein short-range self-interactions of dark matter lead to the formation of neutron star like cores in dark matter halos, and another wherein dark matter has spin quantum number larger than any particle in the Standard Model, being comprised of particle excitations of a so-called higher spin field.

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