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Solving Big Mysteries in Particle Physics with a New Force

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In particle physics, the so-called Standard Model has been known as the best theory for describing elementary particle phenomena observed in Nature. However, there are big mysteries that the Standard Model cannot explain: (1) Why are neutrino masses so tiny? (2) What is the nature of the dark matter in the Universe? (3) What drives the Cosmic Inflation before Big Bang? (4) What is the origin of the asymmetry between ordinary matter and antimatter in the Universe? (5) Why is the CP-violation so small in the Strong Interaction? In this talk, I will discuss a simple extension of the Standard Model with a new force that offers a solution to the above 5 mysteries.