

PHYS 859, Fall 2021
Professor Raman Sundrum

raman@umd.edu

PARTICLE PHYSICS AND COSMOLOGY BEYOND THE STANDARD MODEL

This is an advanced graduate course in theoretical particle physics and cosmology. It is intended for students that have completed a year of quantum field theory (at the level of PHYS 624, 851), or roughly at the level of understanding the basics of Gauge Theory, the Higgs mechanism, Loops and Renormalization. A familiarity with the Standard Model at the level of PHYS 751 will be helpful, as will familiarity with General Relativity.

In the lectures I will introduce various field theoretic methods, both perturbative and non-perturbative, such as AdS/CFT Duality and Effective Field Theory methodology, and introduce some Beyond Standard Model paradigms within particle physics and inflationary cosmology and their implications for experiments/observations.

The requirements for getting course credit will be discussed at the first meeting of class.

I will be making up my own lectures, so there is no text book as such, but I may suggest other reading material as the course progresses.