

Department of Physics & Astronomy

**Dr. Bira Van Kolck**

Affiliate Associate Professor, Department of Physics, Unvi. Of Arizona

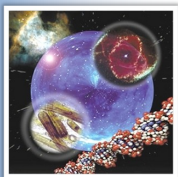
Friday, Mar, 2 2012

Time: 3:15 p.m. -4:15 p.m.

BB 3.04.18

## Is the world fine-tuned?

Much theory building in particle physics (and in some discussion in theology...) revolves around the possibility that certain physical parameters are fine-tuned to yield the world we live in. A famous example of the fine-tuning is the smallness of the resonance energy in the triple-alpha reaction, which is crucial for the observed abundances of the carbon and oxygen in the universe. Fine-tuning is best formulated in the framework of effective field theories (ETFs), which I will introduce together with the concept of naturalness. Using EFT, I will present our current understanding of the emergence of an anomalously small nuclear scale, show examples of the rich physics it generates, and discuss plans for further study of nuclear fine-tuning.



### Department Contact Information

Dr. Marcelo Marucho • 210.458.7862 • [Marcelo.Marucho@utsa.edu](mailto:Marcelo.Marucho@utsa.edu)

Nakia Scott 210.458.5698 [Nakia.Scott@utsa.edu](mailto:Nakia.Scott@utsa.edu)