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To: gssestd@ku.edu.tr; gssefaculty-group@ku.edu.tr
Subject: GSSE Physics Seminar Series: J. Alberto Vazquez

**KOÇ UNIVERSITY
GRADUATE SCHOOL OF SCIENCES AND ENGINEERING
PHYSICS SEMINAR**

Speaker: J. Alberto Vazquez, PhD

Title: The current status of the standard cosmological model: LCDM.

Date: February 9, 2015 Monday

Time: 4:15 P.M.

Cookie & Tea: SOS B07 4:00 P.M.

Place: SOS B07

Abstract:

Rapid advance in the development of powerful observational instruments has led to the establishment of precision cosmology. In this talk we briefly discuss the current status of the universe: theory and observations. Then, we present constraints on cosmological parameters and tests of dark energy models from the combination of the latest baryon acoustic oscillation (BAO) measurements with cosmic microwave background (CMB) data and a recent reanalysis of Type Ia supernova (SN) data. In particular, we take advantage of high-precision BAO measurements from galaxy clustering and the Lyman- α forest (Ly α F) in the SDSS Baryon Oscillation Spectroscopic Survey (BOSS). We show that the standard cosmological model is discrepant at 95% CL with the Ly α F measurements. Hence, in order to reconcile them we consider models with more unusual histories of the dark energy, matter, or radiation components. In part we want to know what constraints our combined data can place on interesting physical quantities. But we also want to see whether any of these alternative models can resolve the discrepancy with the Ly α F measurements at $z = 2.34$.

Biography:

J. Alberto Vazquez received his BS, MS, and PhD degrees from UAEM, and Cambridge University respectively. He joined the U.S. Department of Energy's Brookhaven National Lab in 2013, where he is currently a postdoctoral fellow. His research interests focussed on Dark Matter and Dark Energy theories; and as a member of the Baryon Oscillation Spectroscopic Survey (BOSS) collaboration he is involved in the design and implementation of software to analyze the properties of the universe seen through the Lyman-alpha forest.