

TUFTS UNIVERSITY

Physics and Astronomy Colloquium

“Measurement of the π^0 Lifetime: QCD Axial Anomaly and Chiral Symmetry”

Aron Bernstein

Physics Department
Laboratory for Nuclear Science, MIT

Due to the spontaneously broken symmetry of QCD the π^0 is the lightest hadron, making precision measurements of its lifetime possible. A brief history of these measurements will be presented, highlighted by a new Primakoff effect measurement with an accuracy of 3%. This tests a prediction due to the axial anomaly of QCD, modified by a small isospin breaking chiral correction which is proportional to the mass difference of the up and down quarks. The implications of this result for future experimental tests of the axial anomaly will be discussed, along with some other processes that are sensitive to isospin breaking.

3:00 pm

Friday, February 3, 2012

Robinson 253

Medford Campus

Refreshments served at 2:30 in The Knipp Library, Room 251