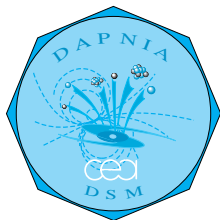


# Service de Physique Nucléaire



## Séminaire

le vendredi 29 juin 2007 à 11H

CEA Saclay, Orme des Merisiers, Bât. 703, Salle 135

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### Measurement of the $\pi^0$ lifetime: testing the QCD axial anomaly

Aron Bernstein

(MIT)

The  $\pi^0$  lifetime has been measured with significantly improved accuracy at Jefferson Lab using the Primakoff effect. This was achieved by careful control of all of the experimental parameters and included auxiliary measurements of the Compton effect and pair production. This measurement is a test of a prediction based on the QCD axial anomaly plus few percent chiral corrections which are proportional to the mass difference of the up and down quarks. The basic physics, and a comparison of theory and experiment, will be presented in the context of spontaneous chiral symmetry breaking in QCD, some of its physical consequences, and other experimental tests. If time permits other processes which are sensitive to the mass difference of the up and down quarks will be discussed.

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*Le café sera servi 10 minutes avant*

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