

# **Half Day IoP Meeting: Neutrinoless Double Beta Decay**



## **Report of Contributions**

Contribution ID: 0

Type: **not specified**

## Welcome

*Wednesday, October 12, 2011 1:00 PM (5 minutes)*

Contribution ID: 1

Type: **not specified**

## Neutrinos and DBD

*Wednesday, October 12, 2011 1:05 PM (40 minutes)*

**Presenter:** LOPEZ-PAVON, Jacobo

Contribution ID: 2

Type: **not specified**

## **Beyond the Standard Model and DBD**

*Wednesday, October 12, 2011 1:45 PM (40 minutes)*

**Presenter:** HIRSCH, Martin

Contribution ID: 3

Type: **not specified**

## **DBD Experiments**

*Wednesday, October 12, 2011 2:25 PM (40 minutes)*

**Presenter:** RAMACHERS, Yorck

Contribution ID: 4

Type: **not specified**

## **Neutrino Mass Bounds from Astrophysics**

*Wednesday, October 12, 2011 3:05 PM (25 minutes)*

**Presenter:** LAHAV, Ofer

Contribution ID: 5

Type: **not specified**

## **Nuclear Matrix Element Calculations**

*Wednesday, October 12, 2011 4:00 PM (40 minutes)*

**Presenter:** RODIN, Vadim

Contribution ID: 6

Type: **not specified**

## Experimental Input for Nuclear Matrix Elements

*Wednesday, October 12, 2011 4:40 PM (40 minutes)*

If neutrinoless double beta decay were to be observed, its half life would provide a determination of the effective neutrino mass as long as the nuclear matrix element can be determined. These matrix elements are not directly sampled by any other physical process and their values, which are by necessity taken from theoretical calculations, are rather uncertain. However, various elements of these calculations can be benchmarked against measureable nuclear properties. Using the  $76\text{Ge}\text{--}76\text{Se}$  system, we have determined the occupancy of protons and neutrons in the 'active orbitals' of the respective  $0^+$  ground states, and the difference between them, thus characterising the ground-state wave functions. The Fermi surface was found to be more diffuse than previous calculations suggested. Pairing properties have also been studied to test the validity of the BCS approximation used in QRPA, one of the major theoretical approaches to calculating the matrix elements. We are continuing this programme by studies of the  $130\text{Te}\text{--}130\text{Xe}$  and  $100\text{Mo}\text{--}100\text{Ru}$  systems, where each presents a different experimental challenge. An overview of the programme and its impact will be discussed.

**Presenter:** KAY, Benjamin



Contribution ID: 7

Type: **not specified**

## **The NEMO and SuperNEMO Experiments**

*Wednesday, October 12, 2011 6:10 PM (25 minutes)*

**Presenter:** TORRE, Stefano

Contribution ID: 8

Type: **not specified**

## **The SNO+ Experiment**

*Wednesday, October 12, 2011 5:45 PM (25 minutes)*

**Presenter:** LEFEUVRE, Gwen

Contribution ID: 9

Type: **not specified**

## **The GERDA Experiment**

*Wednesday, October 12, 2011 5:20 PM (25 minutes)*

**Presenter:** ZUZEL, Grzegorz

Contribution ID: **10**

Type: **not specified**

## **Adjourn**

*Wednesday, October 12, 2011 6:35 PM (5 minutes)*