

# The Future of Neutrino Mass Measurements: Terrestrial, Astrophysical, and Cosmological Measurements in the Next Decade

February 8-11, 2010

## Monday, February 8, 2010

8.00 registration in INT office, 4<sup>th</sup> floor

### PLENARY SESSION 1, room C520

9.00 welcome

9.10 *Kinematic measurements*, R.G.H. Robertson

9.40 *Neutrino mass from double beta decay experiments*, J.F. Wilkerson

10.10 *Theory of neutrino mass and of  $\beta\beta$  nuclear matrix elements*, P. Vogel

10.40 coffee break

### PLENARY SESSION 2, room C520

11.00 *Neutrino masses from oscillation experiments*, C. White

11.30 *Neutrino mass and core collapse supernovae*. G. Fuller

12.00 *Neutrino mass and weak lensing*, S. Dodelson

12.30 lunch

### PLENARY SESSION 3, room C520

2.00 *Neutrino masses from CMB and large scale structure*, Y. Wong

2.30 *Lyman alpha forest*, K. Abazajian

3.00 *Neutrino masses and cosmic simulations*, M. Takada

3.30 *Seeing Cosmic Neutrinos through CMB Lenses*, B. Keating

3.50 *Treatment of neutrino masses in the PDG*, R. Miquel

4.10 coffee

4.30 WORKING GROUPS, room C520 + various other rooms

Q1 – direct measurements

Q2 – double beta decay

Q3 – astrophysics/cosmology

### PLENARY SESSION 4, room C520

6.00 Reconvene working groups. Questions and discussion.

6.30 end of session

**Tuesday, February 9, 2010**

**PLENARY SESSION 5, room C520**

- 9.00        *Direct neutrino mass measurement with KATRIN*, C. Weinheimer  
9.30        *Project-8: Status and prospects*, B. Monreal  
9.50        *MARE: status and prospects*, F. Gatti  
10.10       *Sensitivity of neutrino mass measurements with microcalorimeters*,  
              A. Nucciotti  
  
10.30        coffee

**PLENARY SESSION 6, room C520**

- 11.00       *MARE in Milan*, E. Ferri  
11.20       *Double beta decay search with TeO<sub>2</sub> bolometers*, A. Giuliani  
11.40       *Double beta decay searches with enriched and scintillating bolometers*,  
              S. Pirro  
12.00       *Sensitivity of bolometric double beta decay experiments*, S. Sangiorgio  
  
12.20        lunch  
  
2.00        WORKING GROUPS, room C520 + various other rooms  
              Q1 – direct measurements  
              Q2 – double beta decay  
              Q3 – astrophysics/cosmology  
  
4.00        coffee

**PLENARY SESSION 7, room C520**

- 4.30        *Direct detection of relic neutrinos*, J. Formaggio  
4.50        *Relic neutrino detection with torsion balances*, B. Heckel  
5.10        *Experimental challenges towards the detection of relic neutrinos with  
              unstable nuclei*, M. Messina  
5.30        *Status and Prospects of EXO*, J. Wodin  
5.50        *Prospects for double beta decay and neutrino mass studies with TPCs*,  
              D. Nygren  
6.10        *Experimental challenges for ton-scale Ge experiments*, I. Abt  
  
6.30        end of session

**Wednesday, February 10, 2010**

**PLENARY SESSION 8, room C520**

- 9.00        *Neutrino masses from CMB observations*, A. Cooray  
9.20        *Oscillation of SN neutrinos and neutrino masses*, A. Friedland  
9.40        *Solar neutrinos and metals: What we might be able to do once precise mixing angles and precise nuclear rates are in hand*, W. Haxton  
10.00       *Low-Q-value weak decays*, J. Kopp  
  
10.20       coffee

**PLENARY SESSION 9, room C520**

- 10.50       Report from working group Q1 – direct measurements  
11.10       Report from working group Q2 – double beta decay  
11.30       Report from working group Q3 – astrophysics/cosmology  
  
12.00       *Statistical Analysis of Future Neutrino Mass Experiments*, W. Rodejohann  
  
12.30       lunch  
  
2.00       WORKING GROUPS, room C520 + various other rooms  
              Q4 – model-dependencies and uncertainties  
              Q5 – global analysis and unified constraints  
  
4.00       coffee

**PLENARY SESSION 10, room C520**

- 4.30       Discussion with working groups:  
              How can we address questions Q4 and Q5?  
  
              Q4 – model-dependencies and uncertainties  
              Q5 – global analysis and unified constraints  
  
5.30       WORKING GROUPS, room C520 + various other rooms  
              Q4 – model-dependencies and uncertainties  
              Q5 – global analysis and unified constraints  
  
6.30       end of session

## INT Workshop: The Future of Neutrino Mass Measurements

### Thursday, February 11, 2010

8.30           WORKING GROUPS, room C520 + various other rooms  
                  Q4 – model-dependencies and uncertainties  
                  Q5 – global analysis and unified constraints

#### PLENARY SESSION 11, room C520

9.30           Report from working group Q4 – model-dependencies and uncertainties  
9.50           Report from working group Q5 – global analysis and unified constraints

10.15          coffee

#### PLENARY SESSION 12, room C520

10.30          discussion  
11.30          white paper organization  
12.00          concluding remarks  
  
12.15          adjourn workshop

# **The Future of Neutrino Mass Measurements: Terrestrial, Astrophysical, and Cosmological Measurements in the Next Decade**

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## **Room Assignments for Working Groups**

### **Monday, February 8, 2010**

- 4.30           WORKING GROUPS  
                  Q1 – direct measurements, room C521  
                  Q2 – double beta decay, room C441  
                  Q3 – astrophysics/cosmology, room C520

### **Tuesday, February 9, 2010**

- 2.00           WORKING GROUPS  
                  Q1 – direct measurements, room C521  
                  Q2 – double beta decay, room C441  
                  Q3 – astrophysics/cosmology, C520

### **Wednesday, February 10, 2010**

- 2.00           WORKING GROUPS  
                  Q4 – model-dependencies and uncertainties, room C520  
                  Q5 – global analysis and unified constraints, room C441
- 5.30           WORKING GROUPS  
                  Q4 – model-dependencies and uncertainties, room C520  
                  Q5 – global analysis and unified constraints, room C441

### **Thursday, February 11, 2010**

- 8.30           WORKING GROUPS  
                  Q4 – model-dependencies and uncertainties, room C520  
                  Q5 – global analysis and unified constraints, room C441

## **Rooms Available During Workshop for Plenary and Working Group Sessions**

C520, plenary room  
- entire workshop

C441, INT conference room  
- entire workshop

C521  
- Mon 2/8, 4.00-7.00pm  
- Tue 2/9, 1:30 - 4:30pm  
- Wed 2/10, 4.00-7.00pm

B405  
- Mon 2/8 4:15 - 6:15pm  
- Tue 2/9 1:45 - 4:15pm  
- Wed 2/10 4:15 - 6:45pm

C421, INT seminar room  
Mon 2/8 4:15 - 6:15pm

various INT offices (comfortably sit 3 people)