

Neutrino XVth Rencontres du Vietnam

4-10 August 2019

ICISE

PROGRAM DISCUSSION

THEME AND TITLE

THEME to be discussed. proposal: the first collisions in LEP took place 9 August 1989 so 2019 will be the 30th anniversary of the discovery that there are only three families of neutrinos, which was published on 12-16 October 1989. This leads to discussion of what we know today about these three families, what are the consequences, what physics lies beyond, and how to access it.

TITLE to be discussed: "Three neutrinos and beyond"? "Three neutrinos to make the world"?

Few ideas of speakers:

- 2 days celebrating the 3rd neutrino family discovery
- tau neutrino: Feldman, Niwa, Vuillemin, diLella, Davier, Kirkby, Barish, Pich, Paolone etc etc...
- three neutrinos: Ellis, Spiro, Denegri, Sadoulet (before LEP)
- LEP and SLC start: Steve Myers, Schopper, Rubbia...
- determination of the number of neutrino species Gary Feldman, Jonathan Dorfan, Jacques Lefrançois, Monica Pepe, Sam Ting, Daniel Treille, Albrecht Wagner etc...
- neutrino oscillations Kajita, McDonald, etc. Atmos, T2K, NOvA, KyperK&DUNE, Solar DCHOOZ, RENO, etc.. Yifang Wang, Jung Cao,
- Solar neutrinos
- physics of heavy neutrinos
- neutrinoless double beta decay
- see-saw and origins of neutrino mass
- Grand unification
- search for the origin and consequences of neutrino masses
- neutrinos at colliders
Shaposhnikov, Serra, Antusch, Ruiz, Michael Ramsey-Musolf, Tao Han, Marco Drewes...
- Neutrino at Future facilities

BORIS KAYSER COMMENTS :

I'm looking forward to the conference-organizing meeting of tomorrow. (I don't yet have the information on how to connect, but I assume that will be sent before the meeting.) In advance of the meeting I have a few comments.

I believe the theme/title "Three neutrinos and beyond" is fine. The LEP measurement of the rate of Z decay into invisible daughters was a very nice illustration of the role that "non-neutrino" facilities can play in illuminating the world of neutrinos. That measurement taught us that 3 neutrinos couple to the Z with Standard Model strength.

Other non-neutrino-physics facilities, that are playing a role now, include nuclear reactors and the laboratories where experiments searching for neutrinoless double beta decay are being built or carried out. (Come to think of it, a reactor played a role in the original discovery of the neutrino.) Perhaps the role of non-neutrino facilities could be a sub-theme.

I like the idea of having some discussion at the meeting of neutrinos at colliders. I believe that both CMS and ATLAS are looking for a possible heavy neutrino. (MicroBooNE is looking for one too, at a neutrino facility.) If found, such a neutrino could tell us through its decays whether neutrinos are Majorana or Dirac particles.

As we know, there is a lot of attention being paid to the possibility of 1 eV scale sterile neutrinos. Numerous experiments have presented results on this possibility, there have been analyses by Joachim Kopp and others on the degree to which the various bits of data are or are not compatible, and there is a major experimental program (SBN) at Fermilab to probe the possibility. I suggest that our conference include explicit discussion of the anomalies that drive us to consider the possibility of 1 eV scale sterile neutrinos, and discussion of alternative explanations of these anomalies.