MANTS Meeting

Report of Contributions

https://events.icecube.wisc.edu/e/mants2013

Contribution ID: **0** Type: **not specified**

Test

Primary author: BURRESON, Colin (o=uwmad,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Presenter: BURRESON, Colin (o=uwmad,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Contribution ID: **3** Type: **not specified**

test

test

Primary author: BURRESON, Colin (o=uwmad,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Presenter: BURRESON, Colin (o=uwmad,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Contribution ID: **5** Type: **not specified**

test2-wisc

test2

Primary author: BURRESON, Colin (UW-Madison IT Staff)

Presenter: BURRESON, Colin (UW-Madison IT Staff)

Contribution ID: **6** Type: **not specified**

last test

test test

Primary author: BURRESON, Colin (UW-Madison IT Staff)

Presenter: BURRESON, Colin (UW-Madison IT Staff)

Contribution ID: **7** Type: **not specified**

Event fitting with direct event re-simulation

Tuesday, 15 October 2013 10:30 (20 minutes)

DirectFit, likelihood, GZK cluster

Primary author: CHIRKIN, Dmitry (o=uwmad,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Presenter: CHIRKIN, Dmitry (o=uwmad,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Session Classification: Reconstruction

Track Classification: Chirkin - DirectFit

Contribution ID: **8** Type: **not specified**

Understanding Atmospheric Background in Neutrino Telescopes

Monday, 14 October 2013 12:05 (20 minutes)

In this presentation I'll review the importance to improve atmospheric neutrino production to probe the sources of systematics in the background estimation for neutrino telescopes. The generation of prompt components by heavy quark mesons is also discussed.

Primary author: Dr DESIATI, Paolo (University of Wisconsin - Madison)

Presenter: Dr DESIATI, Paolo (University of Wisconsin - Madison)

Session Classification: Simulations

Track Classification: Desiati - Nu Gen with CORSIKA

Contribution ID: **9** Type: **not specified**

PINGU mass hierarchy sensitivity

Monday, 14 October 2013 16:30 (20 minutes)

I present an independent study of the PINGU mass hierarchy sensitivity based on the GLoBES (General Long Baseline Experiment Simulator) software, with the same methods and assumptions as used for the beam experiments. Particular attention will be given to the treatment of experiment properties and parameter correlations.

Primary author: Dr WINTER, Walter (Wurzburg university)

Presenter: Dr WINTER, Walter (Wurzburg university)

Session Classification: Studies to PINGU's sensitivity to Neutrino Mass Hierarchy

Track Classification: Winter - PINGU mass hierarchy sensitivity

Contribution ID: **10** Type: **not specified**

PINGU Precision for Atmospheric Oscillation Parameters

Monday, 14 October 2013 12:10 (20 minutes)

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Primary author: Mr KRINGS, Kai (o=rwth,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Presenter: Mr KRINGS, Kai (o=rwth,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Session Classification: Low Energy

Track Classification: Krings - PINGU precision atmos osc

Contribution ID: **11** Type: **not specified**

Introducing WOM: The Wavelength-Shifting Optical Module

Monday, 14 October 2013 11:30 (20 minutes)

Large-scale underground water-Cherenkov neutrino observatories rely on single photon sensors whose sensitive area for Cherenkov photons one wants to maximise. Low dark noise rates and dense module spacing will thereby allow to substantially decrease the energy threshold in future projects. We describe a feasibility study of a novel type of single photon sensor that employs organic wavelength-shifting material (WLS) to capture Cherenkov photons and guide them to a PMT readout. Different WLS materials have been tested in lab measurements as candidates for use in such a sensor and photon capture efficiencies as high as 50 % have been achieved. Based on these findings we estimate that the effective photosensitive area of a prototype built with existing technology can easily exceed that of modules currently used e. g. in IceCube. Additionally, the dark noise rate of such a module can be exceptionally low in the order of 10 Hz. This is of special importance when targeting low-energy neutrinos
that yield only few photons that need to be distinguished from noise hits

Primary author: SCHULTE, Lukas (o=bonn,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Co-authors: KOWALSKI, Marek (o=bonn,ou=Institutions,dc=icecube,dc=wisc,dc=edu); BÖSER, Sebastian (Universität Bonn)

Presenter: SCHULTE, Lukas (o=bonn,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Session Classification: Low Energy

Track Classification: Wavelength-shifting optical modules - Stephan Schulte

Contribution ID: **12** Type: **not specified**

A particle identification algorithm for PINGU

Tuesday, 15 October 2013 10:30 (15 minutes)

We will describe a particle identification algorithm based on identification of "superluminal" hits – photons arriving earlier than expected from propagation of light from a reconstructed cascade vertex.

Primary authors: GROH, John (Penn State University); DEYOUNG, Ty (o=psu,ou=Institutions,dc=icecube,dc=wisc,dc=edu

Presenter: DEYOUNG, Ty (o=psu,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Session Classification: Reconstruction

Track Classification: DeYoung / Groh - Flavor / Particle ID

Contribution ID: **13** Type: **not specified**

A low energy air Cherenkov veto system

Tuesday, 15 October 2013 12:30 (15 minutes)

Preliminary ideas regarding a surface veto array based on simple imaging air Cherenkov telescopes will be presented. Early studies suggest that cosmic ray primaries responsible for atmospheric neutrinos above an energy threshold of a few TeV could be tagged efficiently.

Primary authors: FALCONE, Abe (Penn State University); BERNSTEIN, Harris (Penn State University); MALONE, Kelly (Penn State University); DEYOUNG, Tyce (o=psu,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Presenter: DEYOUNG, Tyce (o=psu,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Session Classification: Air Cherenkov Surface Veto

Track Classification: Air Cherenkov Surface Veto - Ty DeYoung

Contribution ID: **14** Type: **not specified**

Cascade Reconstruction in IceCube

Tuesday, 15 October 2013 09:50 (20 minutes)

Cascade Reconstruction in IceCube

Primary author: KOPPER, Claudio (o=uwmad,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Presenter: KOPPER, Claudio (o=uwmad,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Session Classification: Reconstruction

Track Classification: Kopper - Cascade recon in IC

Contribution ID: **15** Type: **not specified**

ANTARES Highlights

Monday, 14 October 2013 09:50 (15 minutes)

A few selected ANTARES results will be reported.

Summary

A brief review of recent ANTARES results will me made.

Primary author: HERNANDEZ-REY, Juan Jose (IFIC (CSIC-UV))

Presenter: HERNANDEZ-REY, Juan Jose (IFIC (CSIC-UV))

Session Classification: Antares

Track Classification: ANTARES - Juan-Jose Hernandez-Rey

Contribution ID: **16** Type: **not specified**

Studies to PINGU's sensitivity to Neutrino Mass Hierarchy

Monday, 14 October 2013 14:45 (20 minutes)

Studies to PINGU's sensitivity to Neutrino Mass Hierarchy

Primary author: GROSS, Andreas (TU Munich)

Co-authors: CLARK, Ken (o=psu,ou=Institutions,dc=icecube,dc=wisc,dc=edu); BÖSER, Sebastian (Universität Bonn)

Presenter: GROSS, Andreas (TU Munich)

Session Classification: Studies to PINGU's sensitivity to Neutrino Mass Hierarchy

Track Classification: Clark / Gross - PINGU mass hierarchy

Contribution ID: **17** Type: **not specified**

IceCube

Monday, 14 October 2013 09:30 (20 minutes)

Status and Highlights

Primary author: KARLE, Albrecht (o=uwmad,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Presenter: KARLE, Albrecht (o=uwmad,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Session Classification: IceCube

Track Classification: IceCube - Albrecht Karle

Contribution ID: **18** Type: **not specified**

Beam options

Monday, 14 October 2013 16:50 (20 minutes)

The potential of a long baseline neutrino beam pointing towards PINGU or ORCA is discussed in the context of the neutrino mass hierarchy determination

Primary author: Mr BRUNNER, Juergen (DESY)

Presenter: Mr BRUNNER, Juergen (DESY)

Session Classification: Beam options

Track Classification: Brunner - Beam options

Contribution ID: **19** Type: **not specified**

DeepCore oscillation results

Monday, 14 October 2013 14:30 (15 minutes)

Oscillation results from the first year of the completed IceCube DeepCore detector

Primary author: Mr YANEZ, Juan-Pablo (DESY)

Presenter: Mr YANEZ, Juan-Pablo (DESY)

Session Classification: DeepCore oscillation results

Track Classification: Yanez - DeepCore oscillation

Contribution ID: **20** Type: **not specified**

Atmospheric neutrino self-veto

Tuesday, 15 October 2013 11:30 (20 minutes)

Muons produced in the same event as an atmospheric neutrino will exclude the atmospheric neutrino from a sample of events required to originate inside a fiducial volume of a detector. I will discuss how the veto is evaluated for use in the IceCube High Energy Starting Event analysis.

Primary author: GAISSER, Thomas (University of Delaware)

Presenter: GAISSER, Thomas (University of Delaware)

Session Classification: Neutrino Self-Veto

Track Classification: Gaisser - Nu self-veto

Contribution ID: **21** Type: **not specified**

Intrinsic physics limitations to reconstruction

Monday, 14 October 2013 15:35 (20 minutes)

At the characteristic energies (~20 GeV and below) at which ORCA/PINGU will look for hierarchy-dependent effects in the neutrino interaction rate, random fluctuations in the event characteristics will play a significant roll in limiting the accuracy of any reconstruction. In this contribution, the effects of such fluctuations in the determination of the energy and direction of muon tracks and shower events is investigated for neutrino interactions in seawater. These are presented as limitations both for a 'perfect' detector (all photons detected) and the reference ORCA detector, where only some photons will be detected.

Primary author: Dr JAMES, Clancy (University of Erlangen-Nuernberg)

Co-author: Mr HOFESTAEDT, Jannik (ECAP)

Presenter: Dr JAMES, Clancy (University of Erlangen-Nuernberg)

Session Classification: Intrinsic physics limitations

Track Classification: James / Hofestadt - Intrinsic physics limitations

Contribution ID: **22** Type: **not specified**

The km3 simulation package

Monday, 14 October 2013 11:45 (20 minutes)

The km3 simulation package is the standard software suite used by the ANTARES collaboration to simulate the emission and detection of Cherenkov photons. Here, the three programs comprising km3 are described, and the performance of km3's latest revision evaluated. Particular focus is paid to the use of the one-particle approximation, by which Cherenkov emission from hadronic cascades is simulated, and its applicability to ANTARES, KM3NeT, and ORCA.

Primary author: Dr JAMES, Clancy (University of Erlangen-Nuernberg)

Presenter: Dr JAMES, Clancy (University of Erlangen-Nuernberg)

Session Classification: Simulations

Track Classification: James - KM3 simulation

Contribution ID: **23** Type: **not specified**

The cascade reconstruction in the Baikal experiment

Tuesday, 15 October 2013 09:30 (20 minutes)

A new analysis of the data from the NT200 neutrino telescope based on the reconstruction of parameters for high-energy cascades generated in neutrino interactions has yielded new upper limits on the diffuse neutrino fluxes predicted by a number of theoretical models. The upper limit on the all-flavor neutrino flux with an energy spectrum E-2 is 2.9 10-7 GeV cm-2 s-1 ster-1

Primary author: SHAYBONOV, Bair (JINR)

Presenter: SHAYBONOV, Bair (JINR)

Session Classification: Reconstruction

Track Classification: Shaybonov - Cascade recon in Baikal

Contribution ID: **24** Type: **not specified**

Baikal/GVD

Monday, 14 October 2013 10:05 (20 minutes)

The Prototyping phase of the BAIKAL-GVD project has been started in April 2011 with the deployment of a three string engineering array which comprises all basic elements and systems of the Gigaton Volume Detector (GVD) in Lake Baikal. In April 2012 the version of engineering array which comprises the first full-scale string of the GVD demonstration cluster has been deployed and operated during 2012. The first stage of the GVD demonstration cluster which consists of three strings is deployed in April 2013. We describe the configuration and design of the 2013 engineering array and discussed the first results of array operation.

Primary author: Prof. DZHILKIBAEV, Zhan-Arys (Institute for nuclear research)

Presenter: Prof. DZHILKIBAEV, Zhan-Arys (Institute for nuclear research)

Session Classification: Baikal / GVD

Track Classification: Baikal - Zhan-Arys Dzhilkibaev

Contribution ID: **25** Type: **not specified**

News from KM3NeT

Monday, 14 October 2013 10:25 (15 minutes)

The KM3NeT neutrino telescope in the Mediterranean Sea is approaching the first construction phase in 2014/15. The technical solutions to be implemented will be discussed and first results of prototyping activities presented. The talk will conclude with an outlook to the future plans for KM3NeT.

Primary author: Prof. KATZ, Uli (ECAP / Univ. Erlangen)

Presenter: Prof. KATZ, Uli (ECAP / Univ. Erlangen)

Session Classification: KM3Net

Track Classification: KM3NeT - Uli Katz

Contribution ID: **26** Type: **not specified**

KM3NeT and diffuse flux: first preliminary results

Tuesday, 15 October 2013 14:20 (20 minutes)

The prediction on diffuse flux for the KM3NeT will be shown.

Primary author: Dr CONIGLIONE, Rosa (INFN-Laboratori Nazionali del Sud)

Presenter: Dr CONIGLIONE, Rosa (INFN-Laboratori Nazionali del Sud)

Session Classification: KM3NeT options

Track Classification: Coniglione - KM3NeT options

Contribution ID: **27** Type: **not specified**

Atmospheric muons rejection for ORCA

Monday, 14 October 2013 12:40 (15 minutes)

A strong background for the observation of atmospheric neutrino induced upgoing muons is due to the presence of wrongly reconstructed muons. A strategy for the rejection of this background is presented, relying on the output of the reconstruction code “reco”.

Primary author: Mr FUSCO, Luigi Antonio (INFN and University of Bologna)

Presenter: Mr FUSCO, Luigi Antonio (INFN and University of Bologna)

Session Classification: Simulations

Track Classification: Fusco - Mu background ORCA

Contribution ID: **28** Type: **not specified**

Astrophysical Interpretations of the IceCube Excess

Monday, 14 October 2013 10:40 (20 minutes)

I summarize excluded and tentative explanations of the IceCube excess and highlight multi-messenger studies.

Primary author: AHLERS, Markus (o=uwmad,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Presenter: AHLERS, Markus (o=uwmad,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Session Classification: Astrophysical Interpretation of IceCube Excess

Track Classification: Ahlers - AP interpretation of IC excess

Contribution ID: **29** Type: **not specified**

Trigger Studies for ORCA

Monday, 14 October 2013 12:25 (15 minutes)

Trigger algorithms and evaluation of trigger performances for the ORCA detector.

Primary author: Mr GAL, Tamas (ECAP)

Co-author: TZAMARIOUDAKI, Katerina (NCSR Demokritos)

Presenter: Mr GAL, Tamas (ECAP)

Session Classification: Simulations

Track Classification: Gal - Trigger studies ORCA

Contribution ID: **30** Type: **not specified**

Status of simulations for ORCA

Monday, 14 October 2013 11:30 (15 minutes)

Simulation activities for the feasibility study of ORCA for measuring the neutrino mass hierarchy are described. The two mainstream simulation chains, one with a 'reference' detector and one with a dense detector are presented.

Primary author: GALATA, Salvatore (APC)

Presenter: GALATA, Salvatore (APC)

Session Classification: Simulations

Track Classification: Galata - Simulation for ORCA

Contribution ID: **31** Type: **not specified**

Shower reconstruction and analysis with ANTARES & KM3NeT

Tuesday, 15 October 2013 10:10 (20 minutes)

An overview of the shower activities in ANTARES & KM3NeT

Primary author: FOLGER, Florian (Mr)

Presenter: FOLGER, Florian (Mr)

Session Classification: Reconstruction

Track Classification: Folger - Cascade recon in ANTARES and KM3NeT

Contribution ID: **32** Type: **not specified**

Reconstruction and energy estimation for tracks

Tuesday, 15 October 2013 09:45 (15 minutes)

The reconstruction algorithm used for the ORCA feasibility study will be described. The code reconstructs the direction of muon track coming from the muon neutrino and estimates the muon energy. The performance of the algorithm will be shown.

Primary author: TROVATO, Agata (LNS - INFN)

Presenter: TROVATO, Agata (LNS - INFN)

Session Classification: Reconstruction

Track Classification: Trovato - Recon and E estimates

Contribution ID: **33** Type: **not specified**

IceCube In-Ice Veto For High-Energy Starting Events

Tuesday, 15 October 2013 12:10 (20 minutes)

Description of event selection and in-data background estimation used in the recent IceCube high-energy results, along with other details on the analysis.

Primary author: WHITEHORN, Nathan (o=uwmad,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Co-author: KOPPER, Claudio (o=uwmad,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Presenter: WHITEHORN, Nathan (o=uwmad,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Session Classification: Veto and HE Starting Events - Nathan Whitehorn

Track Classification: Veto and HE Starting Events - Nathan Whitehorn

Contribution ID: **34** Type: **not specified**

ORCA mass hierarchy sensitivity study

Monday, 14 October 2013 15:10 (25 minutes)

ORCA mass hierarchy sensitivity study

Primary author: HEIJBOER, aart (nikhef)

Presenter: HEIJBOER, aart (nikhef)

Session Classification: ORCA mass hierarchy sensitivity study

Track Classification: Heijboer - ORCA mass hierarchy

Contribution ID: **35** Type: **not specified**

Reconstruction and energy estimation for tracks

Tuesday, 15 October 2013 10:00 (15 minutes)

Results for an alternative track reconstruction in Orca using the GridFit method developed within Antares.

Primary author: Mr BORMUTH, Robert (Nikhef)

Presenter: Mr BORMUTH, Robert (Nikhef)

Session Classification: Reconstruction

Track Classification: Bormuth - Recon and E estimates

Contribution ID: **36** Type: **not specified**

Flavor Separation

Tuesday, 15 October 2013 10:15 (15 minutes)

The talk is about the afforts which are taken to distinguish between track-like events and shower-like events. In ORCA it is necessary to make this decision as the calculations for mass hierarchy determination is based on muon neutrinos.

Primary author: Mr HEID, Thomas (ECAP)

Presenter: Mr HEID, Thomas (ECAP)

Session Classification: Reconstruction

Track Classification: Thomas Heid - Flavor separation

Contribution ID: **37** Type: **not specified**

Lowering IceCube's energy threshold for point source searches in the southern sky

Tuesday, 15 October 2013 11:50 (20 minutes)

Veto techniques are opening up new doors for point source searches in IceCube. Traditional IceCube point source analyses are only sensitive to PeV-scale fluxes in the southern hemisphere. We demonstrate that extending the "high-energy starting event" veto to lower energies allows IceCube to probe southern sky sources in the 10 TeV – 1 PeV regime. After discussing the event selection and analysis method, we will show projected sensitivities and compare them to ANTARES point source analyses.

Primary author: FEINTZEIG, Jacob (University of Wisconsin–Madison)

Presenter: FEINTZEIG, Jacob (University of Wisconsin–Madison)

Session Classification: Intermediate energy starting tracks

Track Classification: Feintzeig - Intermediate Energy Starting Tracks

Contribution ID: **38** Type: **not specified**

DecaCube - IceCube++ - Part II

Tuesday, 15 October 2013 14:10 (10 minutes)

C

Primary author: Prof. WIEBUSCH, Christopher (o=rwth,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Presenter: Prof. WIEBUSCH, Christopher (o=rwth,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Session Classification: Multi-string extensions / IceCube ++ studies

Track Classification: Wiebusch / Altmann - Multi-string extensions

Contribution ID: **39** Type: **not specified**

Neutrino reconstruction for PINGU

Tuesday, 15 October 2013 09:30 (15 minutes)

Level 2 reconstruction for PINGU is discussed in this talk.
In addition to standard reconstruction algorithms used in
IceCube and PINGU, it includes new reconstruction algorithms
like Santa, IgelFit and HybridReco/MultiNest.

Primary author: Dr SHANIDZE, Rezo (DESY)

Co-author: Prof. KAPPES, Alexander (ECAP, University of Erlangen)

Presenter: Dr SHANIDZE, Rezo (DESY)

Session Classification: Reconstruction

Track Classification: Kappes - Event recon

Contribution ID: **40** Type: **not specified**

Considerations for a surface veto array and a look at event rates

Tuesday, 15 October 2013 13:45 (15 minutes)

I will have a brief look at a surface veto array upgrade. Simulated event rates in IceCube suggest that surface veto detectors will add of order 10 muon neutrino events after atmospheric veto cut depending the threshold. Such strategies may offer benefits for lower energy source searches. They need to be compared to other muon neutrino search channels.

Primary author: KARLE, Albrecht (o=uwmad,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Presenter: KARLE, Albrecht (o=uwmad,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Session Classification: Considerations for surface veto strategies / IceVeto

Track Classification: Karle / Auffenberg - IceVeto

Contribution ID: **41** Type: **not specified**

DecaCube Part I

Tuesday, 15 October 2013 14:00 (10 minutes)

Part I

Primary author: Mr ALTMANN, David (o=humboldt,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Presenter: Mr ALTMANN, David (o=humboldt,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Session Classification: Multi-string extensions / IceCube ++ studies

Track Classification: Wiebusch / Altmann - Multi-string extensions