Rubin LSST-France, CC-IN2P3 Lyon, 13-15/12/2023

Rapport sur les contributions

https://indico.in2p3.fr/e/30995

ID de Contribution: **1** Type: **Non spécifié**

Development of a cosmic shear estimator based on galaxy images second moments

vendredi 15 décembre 2023 11:00 (20 minutes)

Shear estimation began in 1995 with the KSB proposal, which essentially consists of using a combination of the second moments of the observed image of the galaxy and the PSF. Numerous other methods have been proposed over the years, and in most cases, the measurements derived from these methods have to be corrected using simulations, and therefore depend on the assumptions of these simulations, particularly concerning galaxy and PSF profiles. Whether these methods measure shapes by maximum likelihood, or by a more or less complex combination of second moments, the corrections to be applied depend on the details of galaxy and PSF shapes.
Although we use simulations, we are trying here to develop an approach that is independent of the galaxy profile and PSF, since the way the estimator depends on them is measured on the images themselves.

Auteur principal: VAN DEN ABEELE, Enya (LPNHE)

Orateur: VAN DEN ABEELE, Enya (LPNHE)

Classification de Session: Science talks

ID de Contribution: **2** Type: **Non spécifié**

Impact of blending on weak lensing measurements with Rubin/LSST

mercredi 13 décembre 2023 17:40 (20 minutes)

Upcoming deep optical surveys such as the Vera C. Rubin Observatory Legacy Survey of Space and Time will scan the sky to unprecedented depths and detect billions of galaxies. This amount of detections will however cause the apparent superposition of galaxies on the images, called blending, and generate a new systematic error due to the confusion of sources. As consequences, the measurements of individual galaxies properties such as their redshifts or shapes will be impacted, and some galaxies will not be detected. However, galaxy shapes are key quantities, used to estimate masses of large scale structures, such as galaxy clusters, through weak gravitational lensing.
This talk will present a new catalog matching algorithm, called friendly, for the detection and characterization of blends in simulated LSST data for the DESC Data Challenge 2. The purpose of this matching algorithm is to combine several matching procedures and to use well-defined blended systems in order to study their impact on weak gravitational lensing profiles and in a second time on galaxy clusters mass estimates and on cosmological parameters.

Auteur principal: RAMEL, Manon (LPSC / IN2P3)

Orateur: RAMEL, Manon (LPSC / IN2P3)

Classification de Session: Science talks

ID de Contribution: **3** Type: **Non spécifié**

Anomaly detection in Fink

vendredi 15 décembre 2023 14:20 (20 minutes)

The detection of new astronomical sources is one of the most anticipated outcomes of the next generation of large-scale sky surveys. Experiments such as the Vera Rubin Observatory Legacy Survey of Space and Time are expected to continuously monitor large areas of the sky with remarkable deliberation, which will undoubtedly lead to the detection of unforeseen astrophysical phenomena. At the same time, the volume of data gathered every night will also increase to unprecedented levels, rendering serendipitous discoveries unlikely. In the era of big data, most detected sources will never be visually inspected, and the use of automated algorithms is unavoidable. I would like to present the anomaly detection module developed for the Fink community broker –one of the official LSST brokers –to search for unusual astrophysical events in the Zwicky Transient Facility alert stream and LSST in future. I will talk about the recent updates on the module and present the most recent discoveries. The further plans on incorporating the active anomaly detection algorithms will be discussed.

Auteurs principaux: BALUTA, Anastasia; Dr ISHIDA, Emille (CNRS/LPC-Clermont); Dr PELOTON, Julien (CNRS-IJCLab); PRUZHINSKAYA, Maria (LPC); KORNILOV, Matwey; PSHENICHNIY, Timofey

Orateur: PRUZHINSKAYA, Maria (LPC)

Classification de Session: Science talks

ID de Contribution: **4** Type: **Non spécifié**

Super-Sample Covariance in unbinned cluster count analyses

jeudi 14 décembre 2023 10:00 (20 minutes)

Cosmological parameters can be inferred from the measurement of cluster abundance in the unbinned regime. The standard unbinned likelihood is based on Poisson statistics and does not include the Super-Sample Covariance (SSC), assumed to be negligible, arising from the fluctuation and clustering of the underlying matter density field. In this talk, I present a formalism to account for SSC in the unbinned regime and compare it to the standard unbinned approach.

Auteur principal: PAYERNE, Constantin (LPSC (IN2P3))

Orateur: PAYERNE, Constantin (LPSC (IN2P3))

Classification de Session: Science talks

ID de Contribution: **5** Type: **Non spécifié**

Search for orphan GRB afterglows in Rubin LSST data with FINK

vendredi 15 décembre 2023 14:40 (20 minutes)

Gamma-Ray Bursts (GRBs) are among the most energetic phenomena in the Universe. Viewed off-axis, this emission has a negligible gamma-ray flux and is hence called ”GRB orphan afterglow” (OA). To identify OAs in Rubin LSST data, we plan to use the characteristic features of their light curves which depends on several parameters defined by the chosen model, here the forward shock model associated with the electron synchrotron model. In this work, we generated a population of short GRBs and simulated their afterglow light curves with the afterglowpy package. We then used the rubin_sim package to simulate “pseudo-observations”of these OAs with Rubin LSST. Features describing the shape of the light curves are then calculated for the pseudo-observed OA light curves and for a sample of ELAsTiCC data, allowing us to establish some cuts to remove as much as possible non-OA events among all the data. This work will ultimately allow us to implement a filter in the alert broker FINK

Auteur principal: MASSON, Marina (LPSC)

Orateur: MASSON, Marina (LPSC)

Classification de Session: Science talks

ID de Contribution: **6** Type: **Non spécifié**

PhotoZ : Fit of Stellar Population Synthesis models on Spectral Data

vendredi 15 décembre 2023 09:00 (20 minutes)

Our aim is to extract SED templates from spectral and photometric data observed at high redshift to update the database of SED templates used for the PhotoZ SED Template fitting.

At present, we have a set of 550 spectra observed on the Fors2 instrument of the UT1 telescope at the VLT by astronomer Edmond Giraud (LUMP, Eric Nuss and J. Cohen-Tanugi) at an average redshift of 0.3.

These spectra have been supplemented by photometric observations from the Galex and KIDS-VISTA surveys.
We'll show how we can fit DSPS model parameters and dust parameters to these data to extract deredden spectra that we can compare with those obtained with StarLight by Eric Nuss.

This presentation is related to Joseph Chevalier's presentation on obtaining the best SED templates for PhotoZ codes such as LePhare++.

Auteurs principaux: Dr DAGORET, Sylvie (IJCLab); CHEVALIER, joseph (IJCLab - A2C)

Co-auteurs: COHEN-TANUGI, JOHANN (LUPM, Université de Montpellier); MONIEZ, marc (LAL-IN2P3); ANSARI, Reza (Université Paris-Saclay & CEA)

Orateur: Dr DAGORET, Sylvie (IJCLab)

Classification de Session: Science talks

ID de Contribution: **7** Type: **Non spécifié**

StarDICE: A photometric calibration experiment to anchor standard stars on the NIST flux scale at the milli-magnitude level.

vendredi 15 décembre 2023 10:00 (20 minutes)

The number of type Ia supernova observations will see significant growth within the next decade, especially thanks to the Legacy Survey of Space and Time undertaken by the Vera Rubin Observatory in Chile. With this improvement, statistical uncertainties will decrease and flux calibration will become the main uncertainty for the characterization of dark energy. The StarDICE experiment proposes to overcome this uncertainty by measuring the spectra of stars from the CALSPEC catalog at the millimagnitude level, and make it the new calibration reference for the LSST experiment.

The StarDICE experiment is currently operating at l'Observatoire de Haute-Provence, and has been taking data since the beginning of 2023. To reach a sub-percent precision, the instrument throughput will be calibrated and monitored with a LED-based artificial star source, calibrated on NIST photodiodes. In this talk, I will present the ongoin analysis over the slitless spectrophotometric data, and the photometric analysis on the data obtained with the "ugrizy" filters.

Auteur principal: SOUVERIN, Thierry

Co-auteurs: JURAMY-GILLES, Claire ({CNRS}UMR7585); HARDIN, Delphine (Pierre & Marie Curie University, Paris); SEPULVEDA, Eduardo (LPNHE); FEINSTEIN, Fabrice (Université Montpellier 2, CNRS/IN2P3); COHEN-TANUGI, JOHANN (LUPM, Université de Montpellier); NEVEU, Jérémy (LPNHE); SOMMER, Kélian (LUPM/IN2P3); LE GUILLOU, Laurent (LPNHE / Sorbonne Université); BETOULE, Marc (LPNHE); REGNAULT, Nicolas (LPNHE); Dr DAGORET, Sylvie (IJCLab); BONGARD, Sébastien (LPNHE); PLEZ, bertrand (LUPM); NUSS, eric (LUPM); MONIEZ, marc (LAL-IN2P3)

Orateur: SOUVERIN, Thierry

Classification de Session: Science talks

ID de Contribution: **8** Type: **Non spécifié**

Recent progress of the long-wave IR instrument for atmosphere monitoring within the StarDICE experiment

vendredi 15 décembre 2023 09:40 (20 minutes)

With the upcoming Legacy Survey of Space and Time, the number of observed type Ia supernovae is expected to substantially increase, leading to a reduction in statistical uncertainties and thus placing flux calibration as the predominant source of uncertainty in constraining the dark energy equation of state parameter w.

Atmosphere is one of the last remaining sources of systematic uncertainty among others, limiting photometric observations accuracy. In the context of the StarDICE experiment that aims to refine the spectrophotometric reference CALSPEC star catalog down to the millimagnitude level, atmospheric effects need to be corrected with high-precision. Gray extinction is one such atmospheric effect causing wavelength-independent flux attenuation that is challenging to quantify. One proposed solution is the use of an uncooled infrared thermal camera to image the long-wave infrared range (10-12 μm) corresponding to the atmosphere transparency window. In this presentation, I will talk about the basic concept of the instrument, the on-going calibration data analysis, and some preliminary results of recent data obtained in parallel to the StarDICE *ugrizy* photometric observations.

Auteur principal: SOMMER, Kélian (LUPM/IN2P3)

Co-auteurs: JURAMY-GILLES, Claire ({CNRS}UMR7585); SEPULVEDA, Eduardo (LPNHE); COHEN-TANUGI, JOHANN (LUPM, Université de Montpellier); NEVEU, Jérémy (LPNHE); LE GUILLOU, Laurent (LPNHE / Sorbonne Université); BETOULE, Marc (LPNHE); Dr DAGORET, Sylvie (IJCLab); BONGARD, Sébastien (LPNHE); SOUVERIN, Thierry; PLEZ, bertrand (LUPM); MONIEZ, marc (LAL-IN2P3)

Orateur: SOMMER, Kélian (LUPM/IN2P3)

Classification de Session: Science talks

ID de Contribution: **9** Type: **Non spécifié**

Multi messenger astronomy: latest results from the Fink broker

vendredi 15 décembre 2023 15:00 (20 minutes)

The upcoming Vera C. Rubin Observatory with its deep and wide survey of the sky will revolutionize the time domain astronomy. Compared to current sky surveys such as the Zwicky Transient Facility (ZTF), the Rubin Observatory will provide a volume of transient and variable objects at least ten times larger, reaching ten million transient alerts per night. To overcome this challenge, the Fink alert broker has been designed to handle the processing of the Rubin alert stream in real-time.
In this talk, we will cover the status of Rubin's brokers, and in particular the latest results from Fink on ZTF alert data. We will explicitly focus on the real-time multi-messenger astronomy effort carried out in the collaboration. We will describe the preliminary results in searching for real-time coincidences between ZTF alerts and events distributed via the General Coordinates Network (GCN) circulars, and the prospects for Rubin.
Finally, we will describe a new network of telescopes, GVOM, dedicated to the follow-up of alert data from the Fink broker. The GVOM network is a partnership between Fink and the SVOM mission focusing on fast transients.

Auteur principal: LE MONTAGNER, Roman

Orateur: LE MONTAGNER, Roman

Classification de Session: Science talks

ID de Contribution: **10** Type: **Non spécifié**

Enabling discoveries of Solar System objects in large alert data streams

With the advent of large-scale astronomical surveys, such as the Zwicky Transient Facility (ZTF) and the forthcoming Vera
C. Rubin Observatory's Legacy Survey of Space and Time (LSST), the number of alerts generated by transient, variable, and moving
astronomical objects are snowballing, reaching millions of alerts per night. This talk will present Fink-FAT, a third-party module dedicated to the identification of new minor planets of the Solar System integrated with the Fink alert broker real-time operations, which deals with massive alert data streams produced by large-scale surveys. We validated Fink-FAT on ZTF alert packets linked to confirmed Solar System objects from the Minor Planet Center (MPC) database. We extracted orbit candidates using solar system candidates alerts and confronted them with follow-up observations. Despite a much lower efficiency than present linking algorithms, Fink-FAT reaches a high purity level in reconstructing orbits and runs fast, making it suitable for the real-time discovery of new minor planets.

Auteur principal: LE MONTAGNER, Roman

Orateur: LE MONTAGNER, Roman

Classification de Session: Science talks

ID de Contribution: **11** Type: **Non spécifié**

Improving photo-z with FORS2 data

mercredi 13 décembre 2023 17:20 (20 minutes)

In the interest of improving photo-z estimation with template fitting methods, data from observations with FORS2 has been used to generate templates to be used in LEPHARE-like code. An in-house estimator enables access to the whole posterior distribution of redshift and aims to help us understand how to generate / select the best templates, and how to extract the closest point-estimate to the true redshift.

Auteur principal: CHEVALIER, joseph (IJCLab - A2C)

Co-auteur: Dr DAGORET, Sylvie (IJCLab)

Orateur: CHEVALIER, joseph (IJCLab - A2C)

Classification de Session: Science talks

ID de Contribution: **13** Type: **Non spécifié**

Compensations de couleur pour LSST avec AuxTel

vendredi 15 décembre 2023 09:20 (20 minutes)

Nous travaillons sur une technique d'estimation des compensations de couleur par objet basées sur des observations spectroscopiques avec le télescope auxiliaire (AuxTel) à appliquer à la photométrie de LSST. Cette méthode se basera sur la comparaison des couleurs obtenues à partir de spectres standards lors de la traversée d'une atmosphère standard et lors de la traversée d'atmosphères simulées avec différentes transparences, fonctions des composants chimiques.

Auteurs principaux: RODRIGUEZ MONROY, Martin (IJCLab); MONIEZ, marc (LAL-IN2P3); Dr DAGORET, Sylvie (IJCLab); NEVEU, Jérémy (LPNHE); CHEVALIER, joseph (IJCLab - A2C)

Orateur: RODRIGUEZ MONROY, Martin (IJCLab)

Classification de Session: Science talks

ID de Contribution: **14** Type: **Non spécifié**

Atmospheric calibration : One year of measuring atmospheric parameters with Auxtel Spectroscopy

We will present measurements of atmospheric parameters obtained after fitting an atmospheric transmission model to the spectra of reference stars (CALSPEC) measured by the Auxtel telescope and reconstructed by the Spectractor program.

Auteurs principaux: NEVEU, Jérémy (LPNHE); Dr DAGORET, Sylvie (IJCLab); MONIEZ, marc (LAL-IN2P3)

Co-auteurs: LE GUILLOU, Laurent (LPNHE / Sorbonne Université); RODRIGUEZ MONROY, Martin (IJCLab); CHEVALIER, joseph (IJCLab - A2C)

Orateur: Dr DAGORET, Sylvie (IJCLab)

Classification de Session: Parallel work sessions

ID de Contribution: **15** Type: **Non spécifié**

Update on the Cluster Finder Comparison Project

jeudi 14 décembre 2023 10:20 (20 minutes)

The Cluster Finder Comparison Project is aimed at building a pipeline for consolidating, validating, and comparing various cluster finder algorithms on the cosmoDC2 and DC2 simulated catalogs. This project not only gives a better understanding of how the different cluster finder algorithms perform but also provides consistent metric estimations like purity and completeness which is to be used in cosmological predictions. In this talk we will discuss the current state of the project.

Auteur principal: SOLOMON, Rance (LAPP)

Orateur: SOLOMON, Rance (LAPP)

Classification de Session: Science talks

ID de Contribution: **16** Type: **Non spécifié**

Campagne d'observations sur AuxTel : déroulement, premiers résultats et retour d'expérience

jeudi 14 décembre 2023 14:20 (20 minutes)

En septembre dernier, de nouveaux éléments optiques ont été installés et testés pour la spectroscopie sur AuxTel. Je discuterai des améliorations attendues à la suite de ces modifications, et montrerai les premiers résultats.

Last September, new optical elements were installed and tested for spectroscopy on AuxTel. I will discuss the improvements expected as a result of these modifications, and show the first results.

Auteur principal: MONIEZ, marc (LAL-IN2P3)

Orateur: MONIEZ, marc (LAL-IN2P3)

Classification de Session: Science talks

ID de Contribution: **17** Type: **Non spécifié**

Fink

mercredi 13 décembre 2023 15:00 (15 minutes)

In this talk, I will review the status, recent achievements and scientific results from the Fink project, and discuss the future roadmap.

Auteur principal: Dr PELOTON, Julien (CNRS-IJCLab)

Orateur: Dr PELOTON, Julien (CNRS-IJCLab)

Classification de Session: General news and updates

ID de Contribution: **18** Type: **Non spécifié**

Preliminary Results of Growth-Rate Measurement using Simulated LSST SNe Ia

jeudi 14 décembre 2023 09:40 (20 minutes)

Analyzing the distribution of peculiar velocities for a sample of objects enable us to measure the growth-rate of cosmic structure ($f\sigma_8$), which is directly linked to the theory of gravity assumed in the cosmological model. In this work we measure peculiar velocities of SNeIa by comparing their estimated distances with redshifts. We recover the SNeIa peculiar velocities through the residual of the Hubble Diagram and we measure $f\sigma_8$.

In this work we have used mocks from Outer Rim N-body simulations to obtain realistic velocities for the simulated SNeIa. Using the LSST observing strategy and **SNsim** survey simulator, we have simulated realistic light-curves. We present the first preliminary results on $f\sigma_8$ from LSST SNeIa, under simple assumptions on the selection function.

Auteur principal: ROSSELLI, Damiano (CPPM)

Orateur: ROSSELLI, Damiano (CPPM)

Classification de Session: Science talks

ID de Contribution: **19** Type: **Non spécifié**

As a member of LSST France, what LSST data products do you need for your research?

jeudi 14 décembre 2023 16:40 (20 minutes)

In this contribution we will present the data products that the Rubin project is deliver as part of the annual data releases of LSST as well as the services and tools to access them at the archive center and other data access centers around the world. We will provide the reference documentation prepared by Rubin for the needs of the science collaborations.

We will also mention the data products we can expect to have available at CC-IN2P3 given the known budgetary constraints.

The end goal is to start a dialog with scientists members of LSST France to identify what among those products are **necessary** at CC-IN2P3 for conducting the research relevant for them as well as the tools as services required to scientifically exploit those products.

Auteurs principaux: HERNANDEZ, Fabio (CC-IN2P3); Dr MAINETTI, Gabriele (CC-IN2P3); LE BOULC'H, Quentin (CC-IN2P3)

Orateurs: HERNANDEZ, Fabio (CC-IN2P3); Dr MAINETTI, Gabriele (CC-IN2P3); LE BOULC'H, Quentin (CC-IN2P3)

Classification de Session: General news and updates

ID de Contribution: **20** Type: **Non spécifié**

Welcome!

mercredi 13 décembre 2023 14:00 (5 minutes)

Orateur: DOUX, Cyrille (LPSC)

Classification de Session: General news and updates

ID de Contribution: **21** Type: **Non spécifié**

Code of conduct

mercredi 13 décembre 2023 14:05 (5 minutes)

Orateur: Dr RIGAULT, Mickael (IP2I)

Classification de Session: General news and updates

ID de Contribution: **22** Type: **Non spécifié**

A weak lensing view of the Frontier Field clusters

vendredi 15 décembre 2023 11:20 (20 minutes)

I will present the weak lensing analysis of the 6 very massive and complex Frontier Field clusters, using the BUFFALO HST observations, and I will discuss how the different measuring and modeling assumptions impact their mass estimation.

Auteur principal: NIEMIEC, Anna (LPNHE)

Orateur: NIEMIEC, Anna (LPNHE)

Classification de Session: Science talks

ID de Contribution: **23** Type: **Non spécifié**

General news from Rubin and DESC

mercredi 13 décembre 2023 14:10 (20 minutes)

Orateur: Dr BREGEON, Johan (IN2P3 LSPC)

Classification de Session: General news and updates

ID de Contribution: **24** Type: **Non spécifié**

Building the pre-Operations communication plan

mercredi 13 décembre 2023 14:30 (30 minutes)

Orateur: SHIFRIN-SUTER, Gaelle (Centre de Calcul de l'IN2P3)

Classification de Session: General news and updates

ID de Contribution: **25** Type: **Non spécifié**

Computing

Orateurs: BOUTIGNY, Dominique (LAPP); HERNANDEZ, Fabio (CC-IN2P3)

Classification de Session: General news and updates

ID de Contribution: **26** Type: **Non spécifié**

Lightning talks

mercredi 13 décembre 2023 15:15 (15 minutes)

Classification de Session: General news and updates

ID de Contribution: **27** Type: **Non spécifié**

First images from Euclid

mercredi 13 décembre 2023 16:00 (30 minutes)

Orateur: GILLARD, William (CPPM - Université Aix-Marseille)

Classification de Session: Science talks

ID de Contribution: **28** Type: **Non spécifié**

Prospect for spectroscopic observations of Rubin detected counterparts of gravitational wave events from next generation interferometers

vendredi 15 décembre 2023 14:00 (20 minutes)

Gravitational wave (GW) multi-messenger (MM) observations of binary neutron star systems mergers (BNSs) are extremely challenging. With current GW interferometers, BNS detection rates are low. This will significantly improve with next generation gravitational wave interferometers, such as the Einstein Telescope (ET). These latter will detect thousands of BNS beyond the Local Universe, revolutionizing MM astrophysics.
Electromagnetic (EM) counterparts of ET BNS detections will likely be faint and to be found within large error regions among a huge number of contaminants. Photometric observations with Rubin will be fundamental to detect counterpart candidates. To exploit such observations at best, it is necessary to identify and characterize the EM counterparts. To this purpose spectroscopic observations are mandatory in most cases, and currently they are the bottleneck of GW-MM science.
In this context, I am exploring the possibility of using the next generation Integral Field Spectroscopy (IFS) and Multi-Object Spectroscopy (MOS) to this aim, considering the synergy with Rubin photometric observations.
I will present the results of the work I am carrying out within the Wide-field Spectroscopic Telescope (WST) science team and the MM division of the ET Observing Science Board to prepare WST observations to identify the EM counterparts of ET BNS detections.

Auteur principal: BISERO, Sofia (GEPI, Observatoire de Paris, Université PSL, CNRS)

Co-auteurs: VERGANI, Susanna (GEPI, Observatoire de Paris, Université PSL, CNRS); BRANCHESI, Marica (Gran Sasso Science Institute); LOFFREDO, Eleonora (Gran Sasso Science Institute)

Orateur: BISERO, Sofia (GEPI, Observatoire de Paris, Université PSL, CNRS)

Classification de Session: Science talks

ID de Contribution: **29** Type: **Non spécifié**

An introduction to MLOps

mercredi 13 décembre 2023 17:00 (20 minutes)

Reproducibility is a very important topic in today's research world.
With the upcoming wealth of data and amount of code needed to process it, using an adequate set of tools is key to help you and your colleagues ensure the produced results will be reproducible, or at least keep track of how they were achieved. This is what MLOps intends to do.

In this presentation I will define what are MLOps and motivate the use of these tools in a daily context, both for machine learning and general research purposes.

Auteur principal: BOUCAUD, Alexandre (APC / IN2P3)

Orateur: BOUCAUD, Alexandre (APC / IN2P3)

Classification de Session: Science talks

ID de Contribution: **30** Type: **Non spécifié**

Constraining f(R) gravity with cross-correlation of galaxies and cosmic microwave background lensing

vendredi 15 décembre 2023 11:40 (20 minutes)

We look for signatures of the Hu-Sawicki f (R) modified gravity theory, proposed to explain the observed accelerated expansion of the
universe; in observations of the galaxy distribution, the cosmic microwave background (CMB), and gravitational lensing of the CMB.
We study constraints obtained by using observations of only the CMB primary anisotropies, before adding the galaxy power spectrum
and its cross-correlation with CMB lensing. We show that cross-correlation of the galaxy distribution with lensing measurements is
crucial to breaking parameter degeneracies, placing tighter constraints on the model. In particular, we set a strong upper limit on
log| fR0 |< −4.61 at 95% confidence level. This means that while the model may explain the accelerated expansion, its impact on large-
scale structure closely resembles General Relativity. Studies of this kind with future data sets will probe smaller potential deviations
from General Relativity.

Auteur principal: MURRAY, Calum (APC , University of Paris)

Orateur: MURRAY, Calum (APC , University of Paris)

Classification de Session: Science talks

ID de Contribution: **32** Type: **Non spécifié**

Impact of photo-z on Galaxy Cluster detection and characterization, and on the consequent estimation of cosmological parameters

jeudi 14 décembre 2023 10:40 (20 minutes)

The abundance of galaxy clusters is a powerful probe for cosmology, especially on large optical surveys where hundreds of thousands can be detected. One of the main techniques that allows us to evaluate the large number of composing galaxies at a low cost is the photometric estimation of redshifts, i. e. photo-zs. Here we intend to evaluate the propagation of the uncertainties of photozs on the determination of the cluster redshift and mass proxy, and consequently, on cosmological constraints from cluster abundance. This preliminary work is evaluating the impact on the dark matter halos on the DC2 simulation using FlexZBoost photometric redshifts. Ultimately, the goal will be to evaluate this effect on optically detected galaxy clusters and optimize the application of different photo-zs for cluster cosmology.

Auteur principal: Dr AGUENA, Michel (APC)

Co-auteur: MEI, Simona

Orateur: Dr AGUENA, Michel (APC)

Classification de Session: Science talks

ID de Contribution: **33** Type: **Non spécifié**

ZTF instrument model

The ZTF-IN2P3 effort to achieve a photometric precision at the permile level for cosmology studies with type Ia supernova leads to the development of a model of the instrument. This model is used to extrapolate the measured filter transmission performed at normal incident angle by Caltech to the typical incident angle of the P48 Schmidt telescope used by ZTF.

Auteur principal: ROSNET, Philippe (Laboratoire de Physique de Clermont, Université Clermont Auvergne & CNRS/IN2P3)

Orateur: ROSNET, Philippe (Laboratoire de Physique de Clermont, Université Clermont Auvergne & CNRS/IN2P3)

Classification de Session: Parallel work sessions

ID de Contribution: **34** Type: **Non spécifié**

Impact of the galaxy cluster environment on the stretch distribution of type-Ia supernovae with ZTF

jeudi 14 décembre 2023 09:00 (20 minutes)

Understanding the impact of astrophysical environment on type Ia supernovae (SNe Ia) properties is crucial to minimize systematic uncertainties in cosmological analyses based on this probe. We investigated the dependence of the SN Ia SALT2.4 light-curve stretch on the distance from their nearest galaxy cluster to study a potential effect of the intracluster medium (ICM) environment on SNe Ia intrinsic properties. We used the largest SN Ia sample sample to date, the ZTF DR2 sample, and cross-matched it with existing X-ray, Sunyaev-Zel'dovich, and optical cluster catalogs in order to study the dependence between stretch and distance to the nearest detected cluster from each SN Ia. In this presentation, I will show how clusters can help understanding SNe Ia astrophysical systematics and how SNe Ia offer a new avenue to studying the evolution of star formation rate in clusters. Our work supports previous evidence that the age of the stellar population is the underlying driver of the bimodial shape of the SN Ia stretch distribution. It also indicates that SNe Ia search at high redshift targeted towards clusters to maximize detection probability should be consider with caution as the stretch distribution of the detected sample would be strongly biased towards the old sub-population of SNe Ia. Furthermore, we show that the effect of the ICM environment on the SNe Ia properties appears to be significant up to the splashback radius of clusters. This is compatible with previous works based on observations and simulations of a galaxy age gradient with respect to cluster-centric distance in massive halos. The next generation of large area surveys will provide an order of magnitude increase in the size of SNe Ia and cluster catalogs. This will enable more detailed analyzes of the impact of halo mass on the intrinsic properties of SNe Ia and of the fraction of quenched galaxies in the outskirts of clusters, where direct measurements are challenging.

Auteur principal: RUPPIN, Florian (IP2I Lyon)

Orateur: RUPPIN, Florian (IP2I Lyon)

Classification de Session: Science talks

ID de Contribution: **35** Type: **Non spécifié**

Weak lensing cosmology in a nutshell

Orateur: DOUX, Cyrille (LPSC)

Classification de Session: Science talks

ID de Contribution: **36** Type: **Non spécifié**

DRP optimization

jeudi 14 décembre 2023 16:10 (10 minutes)

Orateurs: Dr BREGEON, Johan (IN2P3 LSPC); LE BOULC'H, Quentin (CC-IN2P3)

Classification de Session: General news and updates

ID de Contribution: **37** Type: **Non spécifié**

Fink

Orateur: Dr PELOTON, Julien (CNRS-IJCLab)

Classification de Session: Parallel work sessions

ID de Contribution: **38** Type: **Non spécifié**

Camera et commissioning

Orateur: GUILLEMIN, thibault (LAPP)

Classification de Session: Parallel work sessions

ID de Contribution: **39** Type: **Non spécifié**

Toward a sizing model for the Rubin/DESC analysis at CC-IN2P3 + discussion

jeudi 14 décembre 2023 17:00 (30 minutes)

Orateurs: RACINE, Benjamin (CPPM/IN2P3/CNRS); DOUX, Cyrille (LPSC); BOUTIGNY, Dominique (LAPP); HERNANDEZ, Fabio (CC-IN2P3); Dr BREGEON, Johan (IN2P3 LSPC); Dr PELOTON, Julien (CNRS-IJCLab); RICCI, Marina

Classification de Session: General news and updates

ID de Contribution: **40** Type: **Non spécifié**

Transient Photometry on Synoptic Surveys: From DES SN 5YR to early LSST data

jeudi 14 décembre 2023 09:20 (20 minutes)

Orateur: SANCHEZ, Bruno (CPPM - CNRS)

Classification de Session: Science talks

ID de Contribution: **41** Type: **Non spécifié**

4MOST and LSST

mercredi 13 décembre 2023 16:30 (30 minutes)

Orateur: RICHARD, Johan (CRAL)

Classification de Session: Science talks

ID de Contribution: **42** Type: **Non spécifié**

Updates on LSST infrastructure work at CC

jeudi 14 décembre 2023 16:20 (20 minutes)

Orateurs: HERNANDEZ, Fabio (CC-IN2P3); Dr MAINETTI, Gabriele (CC-IN2P3); LE BOULC'H, Quentin (CC-IN2P3)

Classification de Session: General news and updates

ID de Contribution: **43** Type: **Non spécifié**

CBP update

vendredi 15 décembre 2023 10:20 (10 minutes)

Orateurs: NEVEU, Jérémy (LPNHE); GUILLEMIN, thibault (LAPP)

Classification de Session: Science talks

ID de Contribution: **44** Type: **Non spécifié**

Camera and commissioning update

jeudi 14 décembre 2023 14:00 (20 minutes)

Orateur: GUILLEMIN, thibault (LAPP)

Classification de Session: Science talks