RÉSUMÉS/ABSTRACTS

Soud Al Kharusi: "Supernova Neutrinos with nEXO"

The nEXO experiment is a proposed neutrino-less double beta decay (0vbb) search in the isotope Xe-136. The experiment's stringent low-background requirements necessitate a muon veto water shield in order to reduce contributions from external radiation. Photomultiplier tubes inside the water will measure Cherenkov light of passing muons; this active shield is referred to as nEXO's Outer Detector. We will discuss the Outer Detector's employment as a supernova neutrino observatory, and what kinds of physics we can learn via supernova neutrino astronomy both with nEXO and globally.

Farah Alibay: "InSight Mission Overview: Revealing the hidden secrets of Mars"

On Monday, November 26th 2018, the InSight (short for "Interior Exploration using Seismic Investigations") Mars Lander touched down safely on the surface of Mars, in a region called Elysium Planitia. It was accompanied by a pair of small brief-case sized spacecraft (CubeSats), that were part of a separate mission named Mars Cube One (MarCO). MarCO performed a flyby of Mars on that day, and provided InSight with telemetry during its Mars Entry, Descent, and Landing (EDL) phase. InSight's goal is to study the interior structure of Mars, in order to understand its evolution. Studying Mars' interior structure answers key questions about the early formation of rocky planets in our inner solar system – Mercury, Venus, Earth, and Mars – more than 4 billion years ago, as well as rocky exoplanets. InSight also measures ongoing tectonic activity and meteorite impacts on Mars.
In this presentation, the highlights of both the InSight and MarCO missions will be discussed. A background of the science investigations being performed by the lander and an overview of the spacecraft's instruments will be presented. Finally, Dr. Alibay will share some insights (pun intended) of what life in a Mars lander control room looks like, along with details of some of the challenges and findings from InSight's first few months on Mars.

Guillaume Allain: "HiCIBaS - High-Contrast Imaging Balloon System : Intégration, lancement et résultats"

En août 2018, une équipe d'étudiants lançait l'instrument HiCIBaS de la Base de ballons stratosphériques de Timmins dans un vol permettant de tester les technologies requises pour l'imagerie à haut contraste sur un vol suborbital: une première pour une équipe canadienne. HiCiBaS est un projet financé par l'Agence spatiale canadienne qui vise la formation d'étudiants dans le domaine des sciences spatiales sur un échéancier serré de deux ans. Lors de cette présentation, nous couvrirons les derniers mois de développements, l'intégration de l'instrument dans la gondole du ballon en préparation du lancement, les résultats obtenus ainsi que toute l'expérience qu'un projet d'envergure comme celui-ci permet d'obtenir pour toute l'équipe.

Bridget Andersen: "Fast Radio Burst flux calibration with CHIME"

Fast radio bursts (FRBs) are bright radio transients of millisecond duration and unknown extragalactic origin. The Canadian Hydrogen Intensity Mapping Experiment (CHIME) is new radio interferometer located near Penticton, B.C., with a 400–800 MHz bandwidth and a $\sim$ 200 square degree field of view that has allowed for the detection of an unprecedented number of FRBs. The efficiency with which CHIME detects these bursts is enabled by its novel design, consisting of four 20m $\times$ 100m cylindrical reflectors with 256 dual-polarization feeds lined along each axis. However, such a novel design comes with novel calibration challenges. In this talk, I will briefly highlight a few of these challenges and how we go about mitigating them to determine the flux of our detected FRBs.

Étienne Artigau: "Dernières nouvelles de SPIRou"

SPIRou est un spectro-polarimètre infrarouge à haute résolution qui a vu ses premières lumières au CFHT au début 2018 et est maintenant disponible à toute notre communauté. SPIRou servira surtout à la recherche d'exoplanètes et à l'études des étoiles jeunes enfouies. Je résumerai la première année d'opération de SPIRou et les améliorations encore à venir pour l'instrument et les logiciels d'analyse.

Frédérique Baron: "Les activités de rayonnement de l'institut de recherche sur les exoplanètes"

L'institut de recherche sur les exoplanètes a été impliqué dans de nombreux projets de rayonnement depuis sa création. Ces projets ont permis à une grande quantité de personnes d'en apprendre davantage sur l'astronomie. Lors de cette présentation, je parcourrai les projets passés ainsi que leurs impacts et je décrirai les projets futurs.

Antoine Bédard: "L'évolution spectrale des étoiles naines blanches chaudes"

L'évolution des étoiles naines blanches, ces denses cadavres stellaires dépourvus de source d'énergie interne et donc condamnés à se refroidir, peut sembler plutôt simple au premier abord. Toutefois, il est connu depuis plusieurs années que la composition de surface des naines blanches peut changer drastiquement en fonction du temps. Certains aspects de ce phénomène, qui est appelé évolution spectrale, demeurent encore mal compris de nos jours. Dans cette présentation, j'aborderai plus spécifiquement l'évolution spectrale des naines blanches chaudes ($T_{\rm eff} > 30\,000\,{\rm K}$). D'abord, je présenterai brièvement de nouveaux modèles d'atmosphère appropriés à l'étude de ces étoiles. Ensuite, j'exposerai les résultats d'une analyse spectroscopique de près de 2000 objets identifiés dans le Sloan Digital Sky Survey. Finalement, je montrerai comment une telle analyse permet de caractériser les variations de la composition de surface des naines blanches sur une bonne partie de la séquence de refroidissement.

Sylvie Beaulieu: "Dernières nouvelles de l'observatoire du Mont-Mégantic"

Je ferai un résumé de la période 2018–2019, une année d'anniversaire aux multiples activités.

Simon-Gabriel Beauvais: "Impact des raies d'absorption telluriques sur les mesures de vélocimétrie radiale de haute précision"

La vélocimétrie radiale est une méthode répandue utilisée, entre autres, dans la détermination de la masse et de la période d'exoplanètes. Cette méthode use en général du principe de la corrélation croisée pour déterminer le déplacement Doppler appliqué sur les spectres d'un objet. Avec l'avènement de la spectroscopie de haute résolution dans l'infrarouge proche, de nouvelles techniques sont requises afin de tirer pleinement avantage de la précision accrue de ces instruments. Ces techniques doivent aussi démontrer une grande résilience face aux raies telluriques, car celles-ci sont problématiques dans cette gamme de longueurs d'onde par leur omniprésence. Nous proposons un nouvel algorithme atteignant en deçà du cm/s RMSE sur des observations simulées dans l'infrarouge proche. Nous utilisons par la suite cet algorithme pour faire des prédictions sur l'impact des raies telluriques et de leurs retraits sur les mesures de vélocimétrie radiale, pour finalement comparer nos résultats avec des données observationnelles disponibles.

Taylor Bell: "Mass loss from the exoplanet WASP-12b inferred from Spitzer phase curves"

The exoplanet WASP-12b is the prototype for the emerging class of ultra-hot, Jupiter-mass exoplanets. Past models and near ultra-violet observations have shown that this planet is losing mass. Analysis of Spitzer observations spanning more than two full orbits of the planet show clear evidence of infrared radiation from the gas stripped from the planet which appears to be flowing directly toward the host star. This accretion signature is only seen at 4.5 μm, not at 3.6 μm, which is indicative either of CO emission at the longer wavelength or blackbody emission from cool, $< 600\,{\rm K}$ gas. These observations suggest that WASP-12b is a missing link between short period planets and cataclysmic binary stars.

Mohit Bhardawaj: "Discerning the true identity of low DM FRBs : galactic or extragalactic?"

Fast radio bursts (FRBs) are bright millisecond-duration pulses of radio emission that are believed to hail from extragalactic, even cosmological, distances. The extragalactic nature is discerned from their large dispersion measures (DM), the integrated electron density along the line of sight to the source, with values exceeding the maximum Galactic contribution from the Milky Way interstellar medium (ISM). However, FRBs with low excess DM are difficult to differentiate from Galactic intermittent and/or highly variable pulsed sources like rotating radio transients (RRATs). This problem is exacerbated when the two in-use Galactic models of free electron density disagree in their predictions. In my talk, I will describe the methods we employed to establish the likely extragalactic origin of one of the low DM CHIME repeating FRBs, R3, and will discuss the applicability of these methods in the future study of low DM FRBs.

Simon Blouin: "L'évolution spectrale des étoiles naines blanches froides"

Se refroidissant déjà depuis des milliards d'années, les naines blanches froides ont beaucoup à nous apprendre sur le passé de notre Galaxie. Accéder à leurs secrets n'est toutefois pas une mince tâche: il faut au préalable modéliser les conditions physiques extrêmes qui caractérisent leur atmosphère. À coup de simulations de dynamique moléculaire et de calculs ab initio de chimie quantique, nous sommes parvenus à mettre au point des modèles d'atmosphère qui permettent pour la toute première fois – preuves à l'appui – de correctement modéliser ces objets. Je discuterai de deux avancées rendues possibles grâce à ces nouveaux modèles: (1) la découverte d'une naine blanche ayant accrété un planétésimal anormalement riche en sodium et (2) l'établissement d'un portrait précis de l'évolution chimique des plus vieilles naines blanches.

Julie Bolduc-Duval: "L'astronomie et les objectifs de développement durable de l'UNESCO"

Et si on utilisait l'astronomie pour changer le monde? En utilisant les 17 objectifs de développement durable de l'UNESCO, je vous donnerai quelques pistes de réflexion pour vos activités de vulgarisation et votre intérêt général.

Connor Bottrell: "The importance of realism in image-based deep neural network classifications of galaxy interactions"

Observations and theoretical predictions alike show that mergers transform galaxies – from changes in AGN activity, star-formation rates and gas metallicity distributions to kinematics and morphology. However, putting these findings in an evolutionary and cosmological context requires large galaxy interaction samples and the ability to connect these changes to specific stages in a merger. In this talk, I will discuss ways that more complete samples and more accurate merger stage classifications can be obtained by combining the hydrodynamical simulations, synthetic observations, and deep learning.

Anne Boucher: "The transit of HD189733b in the eye of SPIRou . I – A search for atmospheric molecular signature"

Where and how exoplanets are forming in the protoplanetary disk? Do they migrate or do they stay put? How is the atmosphere influenced by the radiation of the host star? What does influence chemical disequilibrium in the atmosphere? Being able to determining the abundances of the major chemical constituents, the dynamics, the temperature profile and other properties of exoplanets atmosphere is crucial to answer all these questions and many more, and to better understand their formation and evolution processes as a whole. The primary goal of my project is to characterize in such manner the atmosphere of several exoplanets, going from hot Jupiters to warm Neptunes. This is achieved using the transit spectroscopy method and the high-resolution of the SPIRou instrument at CFHT. After briefly presenting the method and the main features of SPIRou, I will present preliminary results that we obtained thus far.

Elie Bouffard: "Change points in Sgr A*'s X-ray flaring rate: fact or artifact?"

An unusual object, G2, had its pericenter passage around Sgr A* in Summer 2014. Two distinct research teams have claimed, using data from Chandra, XMM-Newton and Swift, that Sgr A*'s bright X-ray flaring rate increased following this encounter. We revisit this problem by only using Chandra observations (including new ones) because it has the best resolution. We use Bayesian blocks to detect and characterize flares, and we produce flare duration and fluence distributions. Using those, we produce Monte Carlo X-ray light curves of all our observations, and retrieve simulated flare duration and fluence distributions. Using this tool, we look for change points where the flaring rate of flares with different fluences changes significantly. We find that the same model parameters are consistent across all previously-claimed change points.

Matt Caplan: "Hybrid crusts during the epoch of crust replacement on accreting neutron stars"

Neutron stars in X-ray binaries accrete matter from a companion. This matter burns explosively forming a mixture of heavy elements which are buried and freeze into the crust. Nuclear reactions occur as this material is compressed, releasing heat into the crust. I will discuss recent work studying "hybrid crusts" which are in the process of being replaced, and will show that crust replacement results in order MeV/nucleon variation in crustal heating during the epoch of crust replacement.

Christian Carles: “Efficacité de la formation stellaire dans les galaxies barrées”

Environ 30% des galaxies spirales présentent une barre; celles-ci ont un impact majeur sur l'évolution de leur galaxie-hôte car elles contribuent à une redistribution du moment cinétique et donc à un déplacement radial du réservoir de gaz de la galaxie. Comme les étoiles sont formées dans ce réservoir, il est logique de s'attendre à ce que la présence d'une barre modifie le taux de formation stellaire de la galaxie.
Hors cette redistribution de gaz est loin d'être triviale et divers aspects de la barre contribuent à accroître la formation stellaire dans certaines zones de la galaxie alors qu'ailleurs, elle sera inhibée. Je présenterai des résultats de simulation numérique qui montrent comment la présence d'une barre accroît l'efficacité de formation stellaire dans le coeur de la galaxie, où en d'autres mots comment les galaxies barrées forment plus d'étoiles que les galaxies non barrées avec la même quantité de gaz.

Tristan Chabot: “Conceptual optical design of GIRMOS”

I will present the latest developments in the conceptual optical design of GIRMOS, the new integral field spectrograph destined to equip the Gemini South Telescope. I will discuss the main requirements of the spectrograph, along with those of its advanced image slicer, and how they are addressed in the proposed conceptual design. Slides will be in english, while the talk itself will be in french.

Alexandre Champagne-Ruel: “La criticalité dans un système évolutif artificiel”

En dépit du nombre important d'exoplanètes découvertes jusqu'ici, aucune d'entre elles n'a révélé avec certitude abriter une quelconque forme de vie. Certains chercheurs suggèrent qu'une révision de nos modèles de ce que constitue le vivant, en prenant davantage en considération ce qui serait réellement universel dans le phénomène de la vie, permettrait de spécifier plus en détail les environnements susceptibles de l'abriter, et donc de la chercher plus efficacement.
Un certain nombre de théories sur l'émergence de la vie suggèrent que celle-ci serait apparue à partir de l'auto-organisation d'ensemble auto-catalytiques, ce qui en ferait la première forme de coopération du vivant. D'autres encore proposent que l'ARN pourrait coopérer pour s'auto-répliquer et éviter les parasites. Enfin, des modèles proposent à leur tour que la vie pourrait avoir surgi dans l'analogue d'une transition de phase, ou même serait une conséquence directe des lois de la thermodynamique, ce qui se prête évidemment à une analyse du type de celles effectuées en physique statistique.
On peut analyser ces phénomènes d'émergence de la coopération et de criticalité via la théorie des jeux : l'étude d'un écosystème évolutif où des agents s'affrontent au dilemme du prisonnier itéré est idéale pour observer ces phénomènes statistiques. Je vous parlerai de deux de ces phénomènes : celui d'attracteur et celui de point critique d'un système dynamique. Une meilleure compréhension de ces phénomènes pourrait éventuellement nous aider à y voir plus clair dans les phénomènes d'émergence dans la nature, et en retour mieux permettre de cerner quelles conditions sont favorables à l'apparition de la vie de manière générale.

Jonathan Chan: “Ground-based transit spectroscopy of the TRAPPIST-1 system with a PCA approach”

The TRAPPIST-1 system presents an unprecedented opportunity to study the atmospheres of potentially habitable Earth-like planets; 7 planets orbit an ultra-cool M8V star, whose extremely small stellar radius results in large transit signatures normally only seen for hot Jupiters. Here we present the results of 3 nights of transit observations from Palomar Observatory, making use of the WIRC-POL instrument and a newly developed, PCA-based, PSF modelling approach to photometric and spectroscopic extraction.

Paul Charlton: "Gemini Imaging of the host galaxies of changing-look quasars"

Changing-look quasars are a recently discovered class of luminous active galactic nuclei that appear to undergo rapid transitions in their accretion state, and significant fading. We use Gemini observations of four faded changing-look quasars to characterize their host galaxies, and search for faint extended emission line regions, or voorwerpjes which can indicate their luminosity history. While no voorwerpjes appear to be present, these host galaxies show disturbed morphologies that indicate recent merger activity. Their colours and general shapes are relatively green and spheroidal when compared to star forming disks and passive elliptical galaxies. This indicates that changing-look quasars are hosted in galaxies similar to other AGN, and are likely to be extremely variable quasars, rather than a different phenomenon. This extreme variability may call into question assumptions made about the accretion flows around supermassive black holes.

Pragya Chawla: "Constraining the locations of Fast Radio Bursts in their host galaxies"

Fast Radio Bursts (FRBs) are bright, extragalactic, millisecond-duration events detectable at radio frequencies, whose origin is still unknown. Ever since the Canadian Hydrogen Intensity Mapping Experiment (CHIME) telescope, based in Penticton, BC, has come online, detections of FRBs have greatly increased. The first thirteen FRBs discovered with CHIME had a slew of interesting properties with seven of them showing significant scattering (pulse-broadening introduced due to propagation in the inhomogeneous intervening medium) across the CHIME bandwidth of $400 - 800$ MHz. Here we show how the observed scattering properties of the CHIME/FRB sample can be useful in determining preferred locations of FRBs within their host galaxies. I will discuss simulations of FRBs in Milky-Way like host galaxies that we performed, the results of which suggest that FRBs are located in extreme environments with stronger scattering properties than the quiescent ISM of the Milky Way, such as HII regions or the vicinity of super-massive black holes.

Dominic Couture: "Âge cinématique de l'association jeune β-Pictoris"

Les associations cinématiques jeunes sont des groupes d'étoiles ayant une cinématique commune, dont il est en théorie possible de trouver l'âge en retraçant leur parcours dans la Voie lactée jusqu'au point où leur dispersion spatiale est minimale. Toutefois, les tentatives passées donnent des âges systématiquement trop jeunes par rapport aux autres techniques de datation. Je parlerai de l'intérêt et des défis associés à cette méthode, dite de "traceback", et de l'impact de la mission Gaia dans ce champ de recherche. Je présenterai également mes propres résultats pour l'association β-Pictoris.

Caroline Cruz-Vinaccia: "A data-driven approach to assessing and increasing diversity and inclusivity in canadian astrophysics: a first step and a call for partners"

(Presenting on behalf of: Carolina Cruz-Vinaccia, Taylor Bell, Hope Boyce, Jordan Mirocha & Dallas Wulf)

In anticipation of the Canadian Long Range Plan 2020 (LRP2020) call for white papers on issues relating to equity, diversity, and inclusion in the field of astronomy, we have begun the process of collecting demographic information for the undergraduate, graduate, and faculty population of the Physics Department at McGill University (where the Astrophysics program is housed).

We will present our current dataset, which includes self-identified, binary gender information for both applicants and registered students between the years of 2002 and 2018 ($N > 5000$). This dataset provides a powerful tool for quantitatively assessing the status of women in the department over time, and for guiding internal department initiatives to foster greater inclusivity and diversity. Standardizing metrics and coordinating methods for collecting data about diversity will allow for measurement of progress over time within departments, as well as comparisons across departments to better assess the state of the field. For LRP2020, we hope to expand this work to include institutions across Quebec and Canada, with the ultimate goal of improving the climate for women and underrepresented minorities in astronomy at the national level.

Bryce Cyr: "Cosmic strings as astrophysical probes"

In this talk, I will introduce the role of topological defect formation in cosmology, and discuss how these defects can be detected in astrophysical and cosmological scenarios. After motivating the importance of studying these defects, I will briefly describe how Cosmic Strings can be related to the phenomenon of fast radio bursts, and also mention new computations and constraints on both superconducting and non-superconducting cosmic strings from the epoch of reionization.

Lisa Dang: "Constraining the dynamical and radiative properties of the eccentric Hot Jupiter XO-3b"

Short-period planets' rotation rates are expected to rapidly synchronize due to tidal interaction with their host stars. As a transiting short-period planet orbits around its host stars, a distant observer will see variation in the overall brightness of the system. Short-period planets on circular orbit are expected to have synchronized rotations and therefore their thermal phase curves can be translated into a longitudinal thermal map of the planet. In contrast with short-period planets on circular orbits, exoplanets on eccentric orbits present additional challenges when one attempts to retrieve information about their atmosphere. In particular, the planet is not tidally synchronized, and without knowledge of the planet's rotation rate, it is difficult to distinguish the flux variation due to the planet's rotation and the change on stellar irradiation, as they also experience eccentric seasons. Fortunately, the time-varying heating that these planets allow us to constrain the radiative and advective timescales of these planets atmosphere as their phase curve represent a balance between the incoming flux, the heat transport efficiency, and time required to radiate energy away. To this day, HAT-P-2b is the only hot Jupiters that benefited from a full-orbit phase observation with Spitzer. During this talk, I will present the full-orbit thermal phase curve of a second eccentric hot Jupiter, XO-3b. I will discuss our constraints on the atmospheric properties of the planet and how they compare with HAT-P-2b's result, as well as new evidence for internal heating.

Anne Darveau Bernier: "The transit of HD189733b in the eye of SPIRou . II – The metastable helium absorption."

Evidence of atmospheric evaporation via hydrodynamical escape has been detected on many highly-irradiated exoplanets. It translates into a strong transit depth in Ly-alpha wings in the UV spectrum. More recently, the metastable triplet state of helium, in the near-infrared at 1083.0 nm, was found to be an excellent new tracer for the upper atmosphere. It is a much better alternative since it's less subject to extinction by the interstellar medium and doesn't require space-based facilities, unlike UV observations. This triplet resides in SPIRous spectral coverage and can be resolved thanks to SPIRous high resolution (R $\sim$ 75 000). Here, we present the detection of the metastable Helium triplet during the first observation of an exoplanet transit by SPIRou and discuss the effect of stellar contamination. This result is in agreement with a previous measurements from CARMENES.

Laurent Drissen: "Dernières nouvelles de SITELLE"

Je présenterai les plus récents résultats scientifiques de SITELLE ainsi que les améliorations proposées au niveau des optiques et des logiciels de réduction et d'analyse des données.

Amélie Dumont: "Dwarf galaxies formation in gas-rich galaxy mergers at $z = 3$"

Major mergers are important drivers of galactic evolution. They compress a high amount of gas to high density, thereby triggering a high star formation rate. Such environment can favor the formation of tidal dwarf galaxies. In the local Universe, these objects form from enriched material, thereby becoming metal-rich themselves. However, since mergers were more frequent when the Universe was younger, one may wonder what are the chemical properties dwarf galaxies that formed a long time ago, at high redshift.

Back then, galaxies were far less enriched than today. Nevertheless, the gas fraction of galaxies was higher than today. This implies that mergers in the young Universe could trigger even higher star formation rate, leading to a faster chemical enrichment. We ask which effect will dominate and determine the chemical properties of the dwarf galaxies formed under those conditions.

Emma Ellingwood: "Calibrating aerogel using an electron beam for HELIX"

The High Energy Light Isotope Experiment (HELIX) is a balloon-borne comic ray experiment to measure the isotopic abundances of light nuclei from $0.2 - 3\,\mathrm{GeV/n}$ including $^{10}\mathrm{Be}/^{9}\mathrm{Be}$. That ratio is key to constraining the cosmic ray propagation mechanism. The experiment includes a mass spectrometer and a tracking system with a ring imaging Cherenkov detector (RICH) which consists of 36 high refractive index ($n \approx 1.15$) aerogel tiles read out by silicon photomultipliers. To discriminate $^{10}\mathrm{Be}$ from $^{9}\mathrm{Be}$, n must be known to within 0.1%. Potential variations across a tile in n larger than this tolerance necessitates finely mapping n at multiple points in every RICH aerogel tile.
This presentation will describe the hardware and procedure to map the refractive index of the aerogel tiles using a 35MeV electron beam. The Cherenkov ring is detected on a CCD array with a constant particle source and fixed setup such that any observed changes in the ring radius can be attributed to a variation in n at the point of interaction of the beam with the aerogel. The aerogel tile is moved laterally in a grid pattern to map the variations in n across every aerogel tile.

Emmanuel Fonseca: "A pulsar-timing backend for the Canadian Hydrogen Intensity Mapping Experiment"

As rapidly-rotating neutron stars, radio pulsars serve as uniquely powerful probes of gravitation, nuclear astrophysics and intense electromagnetic environments. Long-term timing of pulsars is required to resolve physical effects that impact pulsar rotation and yield high-impact constraints on many different phenomena. In this talk, I will describe an accelerated-computing instrument that has been built as a backend for the Canadian Hydrogen Intensity Mapping Experiment (CHIME), in order to undertake long-term timing measurements of radio pulsars in the CHIME sky. I will show a selection of preliminary results, and discuss projected impacts of CHIME/pulsar data on ongoing and future pulsar-timing experiments.

Maude Fortin-Archambault: "Analyse de l'absorption circumstellaire du système WD1145+017"

Certaines naines blanches montrent, contre toute attente, des traces d'éléments lourds à leur surface. On croit maintenant que ces éléments sont le résultat de l'accrétion de corps rocheux jadis en orbite autour de l'étoile. Il est donc possible de déterminer la composition chimique de ces objets à partir d'une analyse spectroscopique, apportant ainsi énormément d'information sur la formation et l'évolution de systèmes planétaires extrasolaires. Cependant, il n'existait, avant tout récemment, aucune preuve directe que les éléments lourds proviennent effectivement d'un corps rocheux en décomposition autour de l'étoile hôte. La découverte en 2015 dun astéroïde en décomposition active autour de la naine blanche WD 1145+017 confirme la théorie d'accrétion et nous donne une opportunité unique de comprendre la dynamique et l'évolution de tels systèmes. Je présenterai ici un survol de mon modèle théorique servant à analyser les zones d'absorption circumstellaires variables observées chez cette étoile.

Jonathan Gagné: "Young Stellar Associations in the era of Gaia"

I will present the latest developments in the search for members of young stellar associations in the Solar neighborhood, within 150 parsecs of the Sun. I will discuss the nature of these sparse and nearby associations and their utility as age-calibrating benchmarks, and present methods for identifying their members. I will show how the recent Data Release 2 of the ESO Gaia mission is strongly impacting our understanding of the Solar neighborhood, including nearby young associations. I will talk about on-going projects to discover and characterize the low-mass stars of these young associations based on Gaia, down to the brown dwarf mass regime. I will also touch on how near-infrared surveys like 2MASS and WISE allowed us to find a few members down in the regime of giant planet masses. Slides will be in english, and the talk itself in french.

Simon Guichandut: "Mass loss from super-Eddington winds in type 1 X-ray bursts"

When a neutron star is accreting matter from a companion star, its surface can reach densities so high that a thermonuclear runaway reaction occurs. Matter gets ejected from the neutron star at high velocities, resulting in a burst that is bright in x-ray for tens of seconds to hours. A subset of these bursts are so powerful that their luminosity exceeds the Eddington luminosity, thereby lifting off the photosphere of the neutron star to upwards of ten times its radius. To understand how the dynamics of these events, it is necessary to study the winds that are driving this expansion. I will describe the analytical and simulation work that is being done to understand these winds.

Falk Herwig: "3D stellar hydrodynamics and nuclear astrophysics simulations of the formation of the elements in the early universe"

The most metal-poor stars contain the fossil record of the formation of the elements in the first generations of stars in the nascent universe. Nuclear astrophysics, stellar hydrodynamics and abundance observations are coming together current frontiers nuclear astrophysics and stellar hydrodynamics, and how these fields come together and interact with observations to advance our understanding the many ways in which the elements form in stars and stellar explosions. Specifically, I will discuss the C-enhanced metal-poor stars (CEMP) which carry enormous overabundances of not only C and often O, but also of many heavy elements, such as Ba, La and Eu, with respect to the solar abundances relative to Fe. For over a decade the heavy-element abundance features of these stars have defied a satisfactory explanation, as no combination of previously known neutron-capture processes (notably the slow and rapid process) would naturally yield the observed abundance patterns. A recent breakthrough has been the realization that intermediate neutron-capture regimes of nucleosynthesis are not only possible, but that several stellar sites, such as rapidly accreting white dwarfs, could naturally explain the observed abundances. These advances have been possible, in part, due to a new generation of large-scale 3D hydrodynamic simulations of convection in the stellar interiors. I will describe our extensive program in 3D hydro, of both shell convection and core convection simulation, and close with and outlook at new frontiers, to use asteroseismology to validate our 3D hydrodynamic simulations.

Farbod Jahandar: "High-resolution spectroscopy and characterization of M dwarfs using deep learning"

Metallicity is a fundamental parameter that impacts many fields of astrophysics, in particular, the determination of exoplanet radius that critically depends on a reliable estimate of the host radius that in turns depends on stellar parameters such as metallicity. Constraining metallicity of early-type (FGK) stars is best achieved through a comparison of hig dispersion optical spectra with theoretical atmosphere models. Constraining metallicity is more difficult for M dwarfs since their optical spectra are dominated by molecules (i.e. TiO) with lack of a clear continuum and few atomic lines. Therefore, metallicity of M dwarfs is usually inferred empirically and indirectly through infrared (IR) photometry and low-resolution IR spectroscopy of M stars companion to FGK stars assumed to be coeval with the M dwarf companion. Currently, thanks to the high-resolution spectrographs of new instruments like SPIRou, high-resolution spectroscopy of M dwarfs has been enabled. In this talk, I will present a new machine learning technique for determination of M dwarfs stellar parameters using their high-resolution spectra. This includes multiple approaches such as using high-resolution synthetic spectra of M dwarfs from PHOENIX stellar models and real observed spectra of multiple M dwarfs from SPIRou.

Matthew Lundy: "VERITAS Observations of Fast Radio Bursts"

Fast radio bursts (FRBs) are energetic, structured, millisecond flashes of radio emission of extragalactic origin. The high luminosity and short duration of these transients require a high-energy astrophysical process. Many theories predict simultaneous optical and gamma-ray emission from these systems on short timescales. VERITAS's ability to simultaneously monitor both of these bands makes it an ideal instrument for the follow-up of these radio transients. Additionally, the recent expansion of the class of repeating FRBs has allowed for targeted observations by a number of different instruments including VERITAS. In this talk, we will present the current capabilities of the VERITAS FRB observing program for both repeating and non-repeating FRBs.

Lisa Malo: "C'est un départ pour VROOMM : Vélocimètre 'a haute Résolution en Optique pour l'Observatoire du Mont-Mégantic"

L'observatoire du Mont-Mégantic a débuté le développement d'un nouveau spectrographe haute résolution en optique. VROOMM utilisera un EMCDD pour capturer les photons de 368 à 871 nm à une résolution spectrale d'environ 80,000. Cet instrument innovateur permettra aux étudiants-chercheurs du CRAQ d'obtenir une formation adéquate sur les particularités de la spectroscopie haute-résolution en optique. L'instrument sera accessible en mode queue et pourra être utilisé conjointement avec PESTO.

Hugo Martel: "Clocking the formation of today's largest galaxies: Wide field integral spectroscopy of Brightest Cluster Galaxies and their surroundings"

The formation and evolution of local brightest cluster galaxies (BCGs) is investigated by determining the stellar populations and dynamics from the galaxy core, though the outskirts and into the intracluster light (ICL). Integral spectroscopy of 23 BCGs observed out to $4r_e$ is collected and high signal-to-noise regions are identified. Stellar population synthesis codes are used to determine the age, metallicity, velocity, and velocity dispersion of stars within each region. The intracluster light (ICL) spectra are best modeled with populations that are younger and less metal-rich than those of the BCG cores. The average BCG core age of the sample is 13.3 ± 2.8 Gyr and the average metallicity is $[\mathrm{Fe/H}] = 0.30 \pm 0.09$, whereas for the ICL the average age is 9.2 ± 3.5 Gyr and the average metallicity is $[\mathrm{Fe/H}] = 0.18 \pm 0.16$. The velocity dispersion profile is seen to be rising or flat in most of the sample (17/23), and those with rising values reach the value of the host clusters velocity dispersion in several cases. The most extended BCGs are closest to the peak of the cluster's X-ray luminosity. The results are consistent with the idea that the BCG cores and inner regions formed quickly and long ago, with the outer regions and ICL forming more recently, and continuing to assemble through minor merging. Any recent star formation in the BCGs is a minor component, and is associated with the cluster cool core status.

Thomas Martin: "M1 through the eyes of SITELLE"

The Crab Nebula (M1) has been observed with SITELLE as an engineering data cube to test SITELLE's ability to reach a spectral resolution of $R = 10\,000$. We will show that it is indeed the case by presenting the first complete mapping of the [NII], Halpha and [SII] lines (SN3 filter) of the Crab at such a resolution. A novel deconvolution technique, reaching sub-km/s uncertainty, reveals a complex filamentary structure surprisingly inhomogeneous in terms of physical conditions. Combining SITELLE's kinematics with long-term HST imagery allows us to reveal the spectacular 3D shape of the Crab.

Keavin Moore: "Water cycling and atmospheric loss on terrestrial exoplanets"

M-dwarfs are the most common stars in the Galaxy, and are host to many rocky planets. The volatile budget of a terrestrial planet importantly determines the amount of water in various reservoirs, from the surface oceans to the large volume sequestered in the mantle. This water is constantly cycled between these reservoirs, through regassing from the surface, and degassing from the mantle. Water may also be lost from the surface through the atmosphere due to the large flux of XUV radiation during the early evolution of the host M-dwarf. I aim to create a coupled model of water cycling and atmospheric loss on terrestrial planets orbiting M-dwarfs to determine the planetary water distribution, including surface water content, throughout the planet's lifetime.

Deniz Ölçek: "Staus of the HIRAX array"

In this talk, I will give a brief update on the status of the Hydrogen Intensity and Real-time analysis eXperiment (HIRAX) which is a 1024 element radio array currently under development in the Karoo desert, in South Africa, aiming to map 21-cm intensity in the Southern Sky. The primary science goal of this experiment is to investigate one of the greatest puzzles facing the contemporary cosmology, namely the dark energy, which occupies 70% of the universe's content and is responsible for the accelerated expansion of the universe. Currently the commissioning of the 8-element pathfinder is continuing and the construction of HIRAX-128 will start late this year. The instrument will operate between 400-800 MHz and will be CHIME's "southern sister experiment", sharing essentially the similar science goals.

Stefan Pelletier: "The Hot Jupiter tau Boo b through the eyes of SPIRou"

SPIRou is finally here and ready for action – now it's time to do some science! With its crazy high resolving power and absurdly wide wavelength coverage in the infrared, this brand new instrument holds great promise for the study of exoplanets. Will it live up to the hype though? In this talk I will present very new SPIRou observations of one of the brightest Hot Jupiters in the sky: the non-transiting exoplanet tau Boo b. With it being 100 times brighter than even the best transiting Hot Jupiter systems, this target represents the perfect test case for atmospheric characterization. Combining this with state-of-the-art modelling frameworks, we can then probe this remote world and aspire to shed light onto long-withstanding questions about planetary formation.

Merrin Peterson: "Wolf 503 b and new planets near the exoplanet radius gap"

Since its launch in 2009, the Kepler telescope has found thousands of planets with radii between that of Earth and Neptune. Recent studies of the distribution of these planets have revealed a gap in the population near $1.5 - 2.0$ Earth radii, informally dividing these planets into "super-Earth" and "sub-Neptunes". The origin of this division is difficult to investigate directly because the majority of planets found by Kepler orbit distant, dim stars and are not amenable to radial velocity follow-up or transit spectroscopy, making bulk density and atmospheric measurements difficult. I will discuss our discovery and validation of a 2 Earth radius planet in direct proximity to the radius gap, orbiting the bright ($J = 8.32$), nearby ($D = 44.5\,\mathrm{pc}$) high proper motion K3.5V star Wolf 503 (EPIC 212779563) from K2 campaign 17. Along with the new planets being discovered by TESS, Wolf 503 b offers a key opportunity to better understand the origin of the radius gap as well as the nature of the intriguing populations of "super-Earths" and "sub-Neptunes" as a whole.

Caroline Piaulet: "Transit and eclipse characterization of the keystone exoplanet WASP-107b"

Over the past few decades, astronomers have scrutinized the sky searching for planets outside of our solar system, and discovered a myriad of extrasolar worlds, exhibiting a stunning diversity of masses and sizes, hence of atmospheric and core compositions. Transit and eclipse spectroscopy has recently emerged as the most fruitful technique when it comes to unveiling the details of the structure, composition and chemistry of exoplanet atmospheres. The Jupiter-size, Neptune-mass exoplanet WASP-107b, orbiting its K6 host star at less than 0.06 AU, is a very peculiar object, member of the so-called "warm Neptunes" population. With its extremely low density, making for a very large atmospheric scale height, it is undoubtedly one of the most exciting targets for transit and eclipse spectroscopy using space-based observatories in the low temperature regime (below 800 K), which remains a yet poorly-understood region of the parameter space. In this talk, I will be presenting the results of a joint analysis of Spitzer/IRAC and HST/WFC3 multi-wavelength transit observations, as well as the first detection of the thermal emission from this planet, and their implications in terms of the formation and composition of its atmosphere.

Ziggy Pleunis: "Fast radio burst morphology with CHIME"

Fast radio bursts (FRBs) are millisecond-duration extragalactic radio transients of elusive origin. The bursts exhibit a variety of time-frequency structures, shaped by an unknown emission mechanism and transformed by propagation through an ionized and inhomogeneous medium. At least two sources of FRBs repeat and show bursts with downward-drifting sub-pulses that have so far not been seen in non-repeating FRBs. The Canadian Hydrogen Intensity Mapping Experiment (CHIME) is a 4-cylinder 80m $\times$ 100m transit radio interferometer, located at the Dominion Radio Astrophysical Observatory near Penticton, B.C. The CHIME/FRB experiment has started detecting a large number of (repeating) FRBs in the 400-800 MHz octave and will gather an unprecedented catalog of bursts, all detected with the same instrument and similar selection function. Here, we show how we use the morphology of FRBs to classify the CHIME sample, distinguish between repeating and non-repeating sources and as a probe of FRB emission and propagation.

Carter Rhea: "X-ray investigation of a high-reshift galaxy cluster undergoing elevated stellar formation"

SpARCS104922.6+564032.5 is one of the most massive and extreme clusters of galaxies known to date. It stands out as harboring a still assembling brightest cluster galaxy (BCG) undergoing extreme stellar formation at $z = 1.7091$ ($\sim 800\,M_\odot$/year), with evidence of a minor-merger occurring north-west of the BCG and a curved tidal tail extending south-east of the BCG. We present the first X-ray images for the cluster. Our 170 ks ($\approx 50\,\mathrm{hour}$) of Chandra observations are groundbreaking not only due to the exceptional nature of the cluster but also because the object is the first of its ilk to ever be imaged so deeply in the X-rays. Using several techniques for calculating galactic substructure and proxies of cooling flows, we develop a more coherent image of the mechanism responsible for the rampant stellar formation of the BCG. These results have direct consequences for our understanding of how the most massive over densities in the Universe form and evolve with time.

Annabelle Richard-Laferrière: "La chasse aux trous noirs les plus massifs de l'Univers à l'aide du télescope spatial Hubble"

Les trous noirs supermassifs jouent un rôle important dans la formation des galaxies en interférant, fort probablement, dans la croissance stellaire. En effet, il y a, entre autres, une corrélation observée entre la masse du trou noir central ($M_{\rm BH}$) et la dispersion de vitesse du bulge stellaire (σ) d'une galaxie. Notre compréhension de cette relation fondamentale est toujours incomplète malgré son utilisation extrêmement fréquente pour supporter les modèles de la formation conjointe des trous noirs et des galaxies. De plus, il y a une déviation à faible masse et un manque de données à haute masse. En effet, seulement quatre trous noirs de masses supérieures à $10^{10} M_{\odot}$ sont connus. Certaines études pointent aussi vers le fait qu'il devrait y avoir une déviation à haute masse. Il faut donc trouver plus de trous noirs de plus de $10^{10} M_{\odot}$ pour comprendre en détail la relation $M_{\rm BH} - \sigma$ et confirmer ou infirmer la déviation à haute masse. C'est ce qui nous a amenés à identifier le trou noir au centre de la galaxie PKS 0745-BCG ($z = 0.1028$) qui devrait être d'au moins $2.5 \times 10^{10} M_{\odot}$, mais pourrait être le premier trou noir mesuré de masse $10^{11} M_{\odot}$. Au cours de cette présentation, je vais donc expliquer pourquoi nous pensons que ce trou noir devrait être un des plus massifs de l'Univers et comment nous pouvons trouver sa masse en utilisant des données du télescope spatial Hubble.

Steven Rogowski: "Atmosphere of HAT-P-18b revealed by HST and Spitzer observations"

Transmission spectroscopy is one of the most powerful techniques for investigating the atmospheres of exoplanets. While earlier studies focused on "hot-Jupiters" with masses similar to or greater than that of Jupiter and equilibrium temperatures of a few 1000 K, more recent studies have extended our knowledge of atmospheric properties into the regime of sub-Jupiter gas giants and those with cooler (< 1000 K) equilibrium temperatures. I will present a spectrophotometric analysis of the warm, Saturn-mass exoplanet HAT-P-18b using HST/WFC3 and Spitzer/IRAC transit observations. In addition to a strong (4σ) detection of water absorption in the planet's atmosphere at 1.4 microns, we find a low abundance of methane relative to water (10% at most) in line with the expectation given by the computed equilibrium temperature and plausible temperature structure of the atmosphere. We also constrain the atmospheric metallicity to roughly 63 times solar and derive an upper limit on the pressure level where clouds may occur of 1 Pa. We thus contribute an additional data point to the tentative empirical trend of atmospheric metallicity versus planet mass for the Solar System giants plus a small sample of exoplanets.

Thomas Rosin: "Calibration of the aerogel tiles for the HELIX RICH"

HELIX (High Energy Light Isotope eXperiment) is a balloon-borne experiment designed to measure the chemical and isotopic abundances of light cosmic ray nuclei, especially the ^{10}Be/^{9}Be ratio over the energy range from 0.2 GeV/n to beyond 3 GeV/n. This is a key measurement for constraining cosmic-ray propagation models. The detector includes a mass spectrometer based on a 1 Tesla superconducting magnet and a high-resolution tracking system to determine particle momenta. Time-of-flight counters and a ring-imaging Cherenkov detector (RICH) are used to measure velocities. The proximity-focussed RICH consists of a radiator made of aerogel tiles (refractive index approximately 1.15) and a detector plane of silicon photomultiplers. For discrimination of the ^{9}Be and ^{10}Be isotopes, the refractive index of the aerogel must be known to a precision of 0.1%. Given the manufacturing tolerances in the production process, the index must be mapped over the lateral extent on a fine grid. In this contribution, we will describe and show initial results from procedures developed for this task. These include laser-deflection measurements.

Maxime Royer: "Étude thermodynamique de la région HII Sh2-158"

Le problème de divergence d'abondance dans le milieu interstellaire reste sans véritable réponse depuis plus de 70 ans. Plusieurs pistes de problème furent énoncées dont entre autres, l'inhomogénéité de la densité dans le milieu, des fluctuations de température à petite échelle ou encore le manque d'étude bidimensionnelle, la majorité étant résultante de spectrographie à fente classique. Plusieurs solutions ont été tentées, mais sans réels impacts. Nous pensons qu'une voie à la résolution de ce problème réside dans une analyse thermodynamique bidimensionnelle complète d'une région HII.
À la suite de plusieurs tentatives, nous avons à l'aide de trois cubes hyperspectraux de SITELLE ainsi que des spectres classiques provenant de l'OMM, produit une étude thermodynamique de la région HII, Sh2-158. À l'aide des spectres de l'OMM, nous avons fait la vérification de la calibration en flux défectueuse des cubes de SITELLE en mains. Nous avons donc créé des cartes diagnostiques de raies ainsi que de caractéristiques physiques de la région telles que l'absorption des poussières ou encore pour une première fois des cartes conjointes de densité et de température. Des pistes de solutions au problème d'abondance peuvent ainsi être amenées avec l'analyse à petite échelle des variations de ces paramètres physiques des régions HII.

Marcel Sévigny: "À qui le prochain ? Les victimes de SITELLE..."

La séquence des derniers stades évolutifs des étoiles massives est toujours l'objet de débat. Grâce à SITELLE, les objets étendus tel que les nébuleuses WR nous révèlent tout leur secret, température, densité, vitesse, abondances, etc. Nous avons eu la chance d'analyser grandement M1-67 par le passé, et nous réservons aujourd'hui le même traitement à notre nouvelle victime, la Nébuleuse du Croissant (NGC 6888). Quels sont les secrets les plus intimes de cette magnifique nébuleuse ?

Geert Jan Talens: "Don't Blink: detecting transiting exoplanets with MASCARA"

Exoplanets transiting bright stars make ideal candidates for atmospheric characterization studies using ground- and space-based telescopes. Nevertheless, the brightest stars have not been previously targeted by transit surveys as they quickly saturate detectors and are sparsely distributed across the sky, requiring short exposure times and a large Field-of-View. The Multi-site All-Sky CAmeRA (MASCARA) is a transit survey aimed at finding planets around these bright stars at $4 < V < 8$. MASCARA consists of two stations, located in the northern hemisphere at the Observatorio del Roque de los Muchachos and in the southern hemisphere at La Silla observatory, respectively. Each station observes the entire local sky down to airmass 3, obtaining photometry of over 70 000 bright stars. A sister survey, bRing, allows for continuous coverage for dec $< -40°$. In this talk I will give an overview of the MASCARA project and present confirmed planets and planet candidates.

Christian Thibeaut: "Assessing the predictive capabilities of avalanche models of solar flares"

X-class solar flares are among the largest (and rarest) eruptive phenomena of the Sun. They are often accompanied by the acceleration of energetic particles which can have significant impacts on Earth's environment. The statistical properties of large eruptive events can be reproduced by self-organized criticality (SOC) models such as avalanche models. Our recent efforts have focused on sampling the stochasticity of avalanche-type models to assess their ability to forecast large flaring events.

Benoit Tremblay: "Réseau de neurones pour produire des données synthétiques du Soleil"

Les phénomènes éruptifs du Soleil sont souvent accompagnés par l'accélération de particules chargées qui peuvent avoir des impacts significatifs sur la Terre. L'abondance de données produites par les satellites et les observatoires terrestres est clé pour l'étude de l'activité solaire à l'aide de méthodes statistiques ou d'algorithmes d'apprentissage machine. Les simulations numériques tentent quant à elles de faire le pont entre la physique décrivant l'intérieur de l'étoile et de telles observations. Toutefois, certaines variables des modèles ne peuvent pas être observées ou mesurées à l'aide d'instruments. Par exemple, les mesures directes des mouvements du plasma à la surface du Soleil sont limitées à la composante le long de la ligne de visée. Récemment, l'apprentissage machine a été utilisé en conjonction avec des simulations numériques du Soleil afin de reconstruire l'ensemble des composantes des mouvements du plasma pour le Soleil calme (i.e. en l'absence d'activité magnétique). Nous avons utilisé des données du Solar Dynamics Observatory en entrée dans un réseau de neurones à convolution pour générer des données synthétiques des mouvements du plasma, i.e. des mouvements du plasma qui reflètent la physique du modèle utilisé pour entraîner le réseau et qui ont l'apparence des mesures produites par un instrument spécifique. Une approche similaire pourrait être envisagée pour éventuellement reconstruire les champs de vitesse du plasma à l'intérieur d'une région active (i.e. une région d'activité magnétique intense) et, par extension, d'autres quantités physiques qui ne peuvent pas être mesurées directement à la surface ou dans l'atmosphère du Soleil.

Olivier Vincent: "À la recherche d'étoiles naines blanches de type ZZ Ceti dans l'échantillon Gaia"

Le satellite Gaia a récemment fourni les mesures de distance de près de 400 000 étoiles naines blanches. Ces distances constituent l'un des ingrédients essentiels pour la détermination des paramètres physiques de ces étoiles. Combinées avec la photométrie Pan-Starrs, les valeurs de température effective et de la masse furent déterminées, et un échantillon d'étoiles naines blanches se trouvant dans la bande d'instabilité de type ZZ Ceti fut sélectionné. À l'aide de la caméra PESTO à l'OMM, un suivi photométrique est en cours afin d'identifier de nouvelles ZZ Ceti dans l'échantillon Gaia. Je présenterai l'état actuel de ce suivi.

Tracy Webb: "Star formation and molecular gas in high redshift cluster galaxies"

The study of molecular gas in distant galaxies is a burgeoning field. Here we present the results of several studies of the molecular gas in cluster galaxies at high ($z > 1$) redshift clusters. The clusters are selected in the optical/NIR through the red-sequence technique of the SpARCS survey. Not only do these studies offer the chance to understand the effect of the cluster environment on the gas content of member galaxies, but the efficient multiplexing of cluster fields provides for large samples of massive galaxies to be observed in one field. Our results reveal cluster galaxies at high redshift, including the Brightest Cluster Galaxies, are replete with molecular gas. Many of the galaxies have spatially resolved kinematic information and exhibit velocity gradients, multiple components, and tentative gas tails. We discuss these results in the context of galaxy stellar mass assembly in dense cluster environments.

Andrew Zwaniga: "Towards coordinated follow-up observations of Fast Radio Bursts with CHIME/FRB using the VOEvent"

Fast radio bursts (FRBs) are bright millisecond-duration radio signals originating from cosmological distances. A diverse variety of FRB theories has been suggested, and any counterpart detection in the electromagnetic spectrum, or an association with a gravitational wave event, could significantly narrow these down. However, to study new FRBs, follow-up observations need data such as approximate sky coordinates soon or immediately after the initial radio detection. The Canadian Hydrogen Intensity Mapping Experiment (CHIME) is a transit radio telescope in Penticton, BC that is presently detecting FRBs in real-time and will soon issue real-time detection alerts using the virtual observatory event (VOEvent) network. This will provide a channel on which other experiments can listen to conduct their own observing campaigns. I will describe the VOEvent network, the current status of CHIME/FRB VOEvents, and how this VOEvent alert service will aid in coordinating multi-wavelength and multi-messenger observations of FRBs.