Modelling Far-

talk: I will show how the starforming-to-quiescent transition follows rules that are very similar to those that govern human death, leading not only to a well-justified "live/dead" terminology for star forming and quiescent galaxies, but to a simple and direct explanation for the Schechter-like stellar mass function for massive

enable the next-generations of x-ray spectrometers.

Discovering Rare AGN with the Stripe 82X Survey

S ea e : Dr. Stephanie LaMassa, Yale University
T e: March 21, 2014 - 4:00 PM
L ca : AT301

Ab ac :

L ca **:** AT101

Ab ac : Some of the most fascinating properties of quasars arise from the strong gravitational field that dominates over all other forces near the supermassive black hole SMBH). Observations of the X-ray spectra of quasars have the potential of testing the theory of General Relativity in a region of strong gravity, constraining the structure of the X-ray emitting region, and further
our understanding of the quasars' role in feedback, quenching of star formation and galaxy evolution.

I will present results from the detection of near-relativistic winds launched near the innermost stable circular orbits of SMBHs.

description using force-free electrodynamics.

New Insights into the Formation and Evolution of the Most Massive Galaxies

S ea e : Dr. Danilo Marchesini, Tufts University
T e: February 14, 2014 - 3:00 PM
L ca : AT305

Ab ac : In the past decade, our understanding of the galaxy population in the last 12 billion years of cosmic history (i.e., since z=4) has improved significantly, thanks to the increasing ability to construct representative snapshots (in time) from z=4 (when the universe was ~1.5 billion years old) to the local universe. I will summarize our current knowledge of the evolution of massive galaxies since z=4, with an emphasis on the recent results from the the UltraVISTA survey. I will conclude by presenting new findings on the evolution since z=3 of the progenitors of local ultra-massive galaxies, challenging previously proposed pictures for the formation and evolution of elliptical galaxies.

Planck and Inflation

S ea e : Dr. Joel Meyers, CITA, University of Toronto
T e: February 13, 2014 - 3:00 PM
L ca : AT101

Ab ac : The results from the Planck satellite have provided excellent constraints on many cosmological parameters allowing us to probe the physics of inflation. While all observations are currently consistent with the simplest models of inflation, many more complicated scenarios are also consistent with the data. In

this talk, I will focus on the theoretical aspects of inflation in light of the Planck data. I will highlight a few observables which are measured by Planck and discuss how future observations will give us non-

guidance to both observers and simulators on how realistic it is to

hardware, an overview of the data processing algorithms with simulation results, results of the ground calibration, and the procedure for in-flight calibration. The introduction includes background information for the ASTRO-H mission and the general design and operation of the CAMS, highlighting the advanced technology of its laser transmitter, corner-cube reflector, and image sensor. The geometric relationships required to obtain the three required relative-motion variables from the two CAMS measurements will be established. The performance of the image correction algorithm based on CAMS data will be studied as simulated x-ray images will first be corrupted by structural distortions of the telescope and then corrected using simulated CAMS data.

The calibration of the CAMS system is a two-step process. The internal CAMS optics are calibrated on the groun

Ab ac : The environments of galaxies strongly influence their evolution. In the local Universe, more than half of galaxies live in groups and clusters, therefore understanding how this environment affects galaxies is important. Using multi-wavelength observations, we can quantify many aspects of the galaxies from the neutral gas to the stellar mass. I will present results of Chandra and XMM-Newton X-ray observations of the diffuse X-ray emission in groups and the X-ray point sources in the Coma infall region, respectively. In groups, we see the formation of the hot IGM and I

such it could not had been resolved before the era of quantum information theory - only now we have the right tools at our disposal.

Directly Determined Linear Radii,

S ea e : Dr. Gerard van Belle, Lowell Observato
T e: November 22, 2013 - 3:00 PM
L ca : Effective Temperatures, and Shapes of Stars from Long-Baseline Optical Interferometry

Ab ac : A brief introduction to the concepts of long-baseline optical interferometry (LBI) will be presented, followed by a

interacts only very weakly with matter. Produced in copious amounts in nuclear reactions and radioactive decays, neutrinos play key roles in the state of the early universe, in cosmology and astrophysics, and in nuclear and particle physics. In the 1970's and 80's, an experiment a mile underground in a gold mine in South Dakota measured the flux of neutrinos from the Sun’s core. It detected only about one-third of the neutrinos predicted by theory, and ultimately led to a much deeper understanding of particle physics. The current status of neutrino experiments will be reviewed, and a new experiment under construction in that same SD gold mine will be described. This experiment aims to show that the neutrino and its antiparticle (the anti-neutrino) are in fact the same particle.

WISH: Wide-

Ab ac : Desert dust is the most abundant aerosol species in the atmosphere and it is also the most efficient ice nucleating material, commonly found in the ice crystal residuals of cirrus and mixed-phase clouds. While dust source regions are increasing due to human activity, it is difficult to measure or model the concentration of dust particles in the upper troposphere with the certainty necessary for global modeling of clouds and their radiative effects on climate. In this talk I will discuss my work on the Lagrangian transport modeling of mineral dust, as well as on the challenges of measuring this aerosol species remotely from space. Finally, I will outline my plans for a Tropospheric Remote Sensing Laboratory at Saint Mary's University.

other hand, the entanglement in the particle-particle partition is Lorentz invariant, thus protecting the consistency of quantum correlations and teleportation results. We show how our results may be generalized to arbitrary spin.

comparable results, that interpolation by cubic splines produces the best results, and that least-squares quadratic interpolation produces results of least accuracy. Increasing the sampling rate in log g by a factor of 3 was found to double the accuracy of interpolations within our grid, while increasing the sampling rate in Teff by a factor of 6 was found to improve the accuracy of interpolations by a between a factor of 1.25 and 1.5. Pre-calculating $R for each model and interpolating among the grid was found to be more accurate than interpolating #R among the grid and computing $R. We also find that the photosphere in the NLTE exact solar model is situated at a lower optical depth than in the LTE exact solar model.

Undergraduate Symposium

S ea e : Undergraduate Symposium
T e: September 6, 2013 - 10:00 AM
L ca : SB160

U de ad a e S

Magnetic Resonance Imaging of Complex Flow: Turbulent Rayleigh-Bénard Convection in a Supercritical Fluid

S ea e : Dr. Joshua M. Bray, Montana State University, Bozeman
T e: September 4, 2013 - 3:00 PM
L ca : L176

Ab ac : In pragmatic terms, the general populace recognizes Magnetic Resonance Imaging (MRI) as a premiere medical imaging modality because it permits three-dimensional examination of soft tissue—in knees, spines, brains, etc.—without

cutting them open or sticking things inside.

In actual fact, many things are better examined without cutting them open or sticking things inside!

As a non-destructive characterization technique, MRI has also emerged as an invaluable tool for engineering applications as diverse as functional materials, contaminant transport in geologic media, and carbon capture and storage. This talk will offer an introduction to MRI techniques aimed toward physicists and will explain how the interaction between nuclear spin and a magnetic field can yield detailed images and signal rich in information about