WEEKLY CALENDAR
March 26-30, 2012

DEPARTMENTAL COLLOQUIUM

"Observing Electromagnetic Counterparts from loud Gravitational Wave Events"

3:40 PM, March 29, 2012
109 Nicholson Hall

Carlos Palenzuela
Canadian Institute for Theoretical Astrophysics (CITA)

Host: Jorge Pullin

• Refreshments served at 3:15 PM in 232 (Library) Nicholson Hall •

In the next few years a new generation of gravitational wave detectors will allow us to "listen" to some of the most energetic events in the universe; the coalescence and merger of binary compact objects composed of black holes and/or neutron stars. If the magnetic field around these objects is sufficiently strong, the binary may produce an electromagnetic burst which we may be able to "see", especially if it is in the form of a jet. A new era of multimessenger astronomy, involving detections of EM, GW and possible neutrino signals, will provide more insight into the physical processes involved in the collisions. Supported by numerical evolutions, I will describe the dynamics of compact binary mergers, focusing on the gravitational waveforms and the possible EM counterparts from these systems.

SPECIAL SEMINAR

"Bone Removal from X-ray CT Angiography Data for 3D Diagnosis"

3:30 – 4:30 PM, Monday, MARCH 26, 2012
109 Nicholson Hall

Abdalmajeid Alyassin
King Abdulaziz University, Saudi Arabia

Host: Wayne Newhauser

• Refreshments served at 3:15 PM in 232 (Library) Nicholson Hall •

A fast and novel technique was developed to exclude obstacle data from a single Computed Tomography Angiography (CTA) data set. The data was minimally processed to preserve the majority of the CTA data in its original form, especially the vascular information. The technique was based on a newly developed adaptive composite mask which used multi-step image processing techniques. Excluding a structure like-bone from CTA data can improve several three dimensional (3-D) visualization techniques such as volume rendering, shaded surface display, or maximum intensity projection to better render the vascular data unveiling any aneurysms or calcifications in a clear manner. This enhancement in angiogram visualization is expected to increase the sensitivity of clinical diagnoses. The proposed technique demonstrated obstacle free 3-D vessel visualization in ten different CTA data sets.

PUBLICATIONS:

1. "Contrasting features of anisotropic loop quantum cosmologies: The role of spatial curvature", Brajesh Gupt and **Parampreet Singh**, Physical Review D85, 044011 (2012).