

# Astronomical Research at TAMU

Faculty

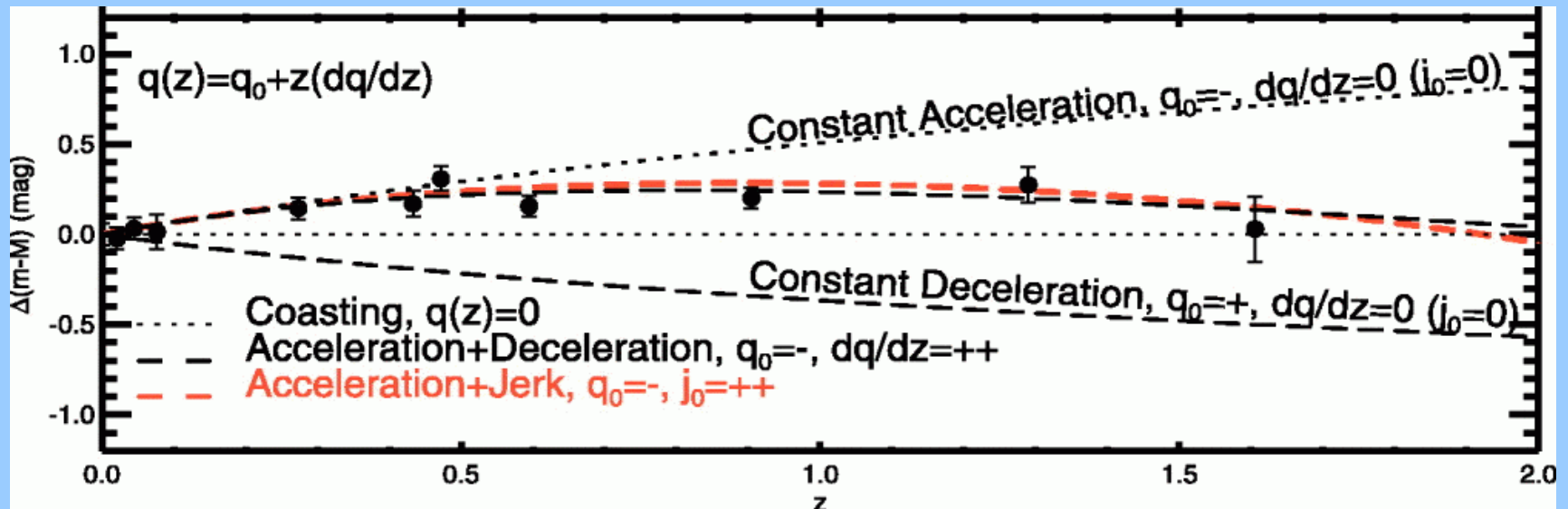
Future facilities and projects

Nick Suntzeff	March 2006
Lifan Wang	October 2006
Kevin Krisciunas	November 2006
Darren DePoy	January 2008
Casey Papovich	April 2008
Lucas Macri	July 2008
Kim-Vy Tran	January 2009

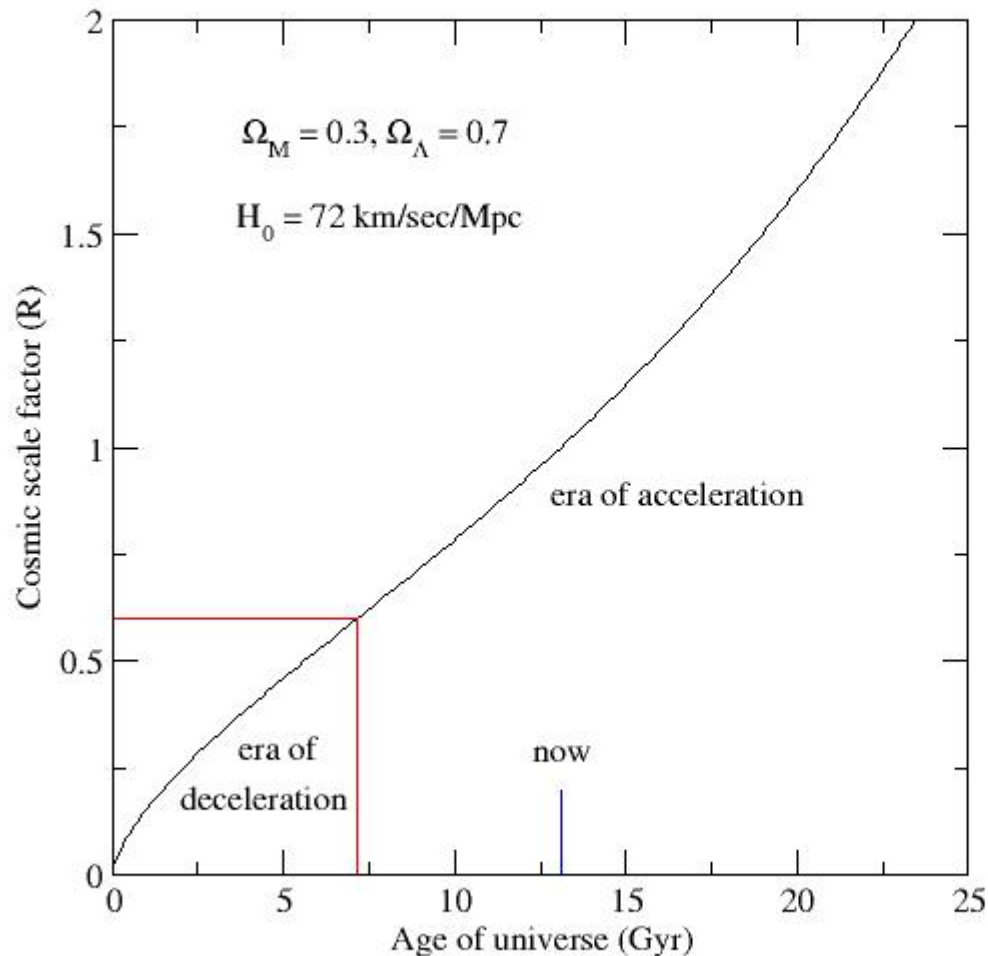
Our activities have been (will be) in the areas of supernova research, Dark Matter, Dark Energy, large scale structure, astronomical instrumentation.....

The ESSENCE Project – a supernova search being carried out with the 4-m telescope at Cerro Tololo Inter-American Observatory in Chile





Compared to the “empty universe model” or a model of the universe having gravitating matter, distant supernovae are too faint by a statistically significant amount. The medians shown above imply the existence of a non-zero vacuum energy that is causing the universe to accelerate.



When the universe was small, the gravitational attraction of all the matter was causing the universe's expansion to slow down. But several billion years ago the universe became large enough that the non-zero vacuum energy caused a shift to an accelerating universe.

# Future Projects

## Dome A, Antarctica

Four 14.5-cm telescopes to be installed in January, 2008. Will monitor a few thousand stars with a time resolution of 15 seconds.

Three 1-m telescopes to be installed in Jan 2009. Will provide light curves of ~5000 supernovae over 4 years. Large survey of galaxies in polarized light. Will study Dark Matter, Dark Energy, and be used to search for extra-solar planets.

# New instruments for existing telescopes at Las Campanas Observatory

2.5-m

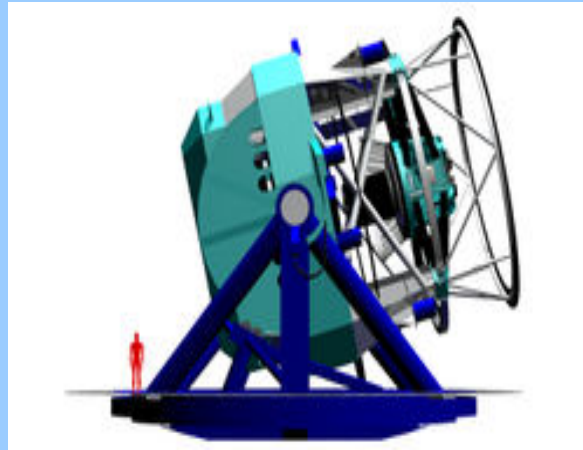


6.5-m





Giant Magellan Telescope (7 X 8.2-m)



The Large Synoptic Survey Telescope (LSST), an 8-m class telescope with a very wide camera, to be situated at Cerro Pachon in Chile. It will scan the entire sky visible at that latitude every few days. LSST will discover many thousands of supernova and asteroids.