

## Using still photography to make fulldome time-lapse movies

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### Abstract

This paper presents a demonstration of, and a technique for, creating high-resolution, fulldome time-lapse movie content for planetariums using a Canon 1Ds Mk II digital camera. The objective is to produce educational content for planetariums, including those using state-of-the-art 4K x 4K digital mono and stereo 3D-projection systems. The finished movies show the operation of the Gemini telescopes as seen from the observing floor over the course of a night.

### Introduction

A high-resolution camera that can shoot RAW file format is set up with a 180° fisheye lens. The camera used here is a Canon EOS 1Ds Mk II with a Sigma 8 mm circular image fisheye lens. A laptop computer controls the camera and stores the downloaded images. The camera shutter is set to the “bulb” setting and the exposure duration and frequency are controlled by an intervalometer. The exposure sequence begins at sunset and runs automatically via the laptop for the entire night. The individual exposure time is set to about 50 seconds in every 60 seconds.

All the images are archived using Adobe Bridge© before any editing is done and the file names are changed to reflect site, project, date and any other valuable information or metadata that might be helpful in retrieving a file at some future date.

The renamed RAW files are opened from Bridge into Adobe Camera RAW© (ACR), an Adobe PhotoShop© plug-in. The RAW files are fine-tuned within ACR, including making any correction for chromatic aberration. Chromatic aberration is a particularly vexing problem for the extreme wide angle or fisheye lenses used in this kind of project.

Once the images are adjusted in ACR, they are opened in Adobe PhotoShop© via ACR. Once in PhotoShop© an action or script is created to automate any further work. The new image file is saved to a new directory via the action and the finished movie will be made from this file using QuickTime Pro or another more sophisticated program depending on the final need.

Sample movies can be found online at:  
[www.gemini.edu/index.php?option=com\\_gallery](http://www.gemini.edu/index.php?option=com_gallery)

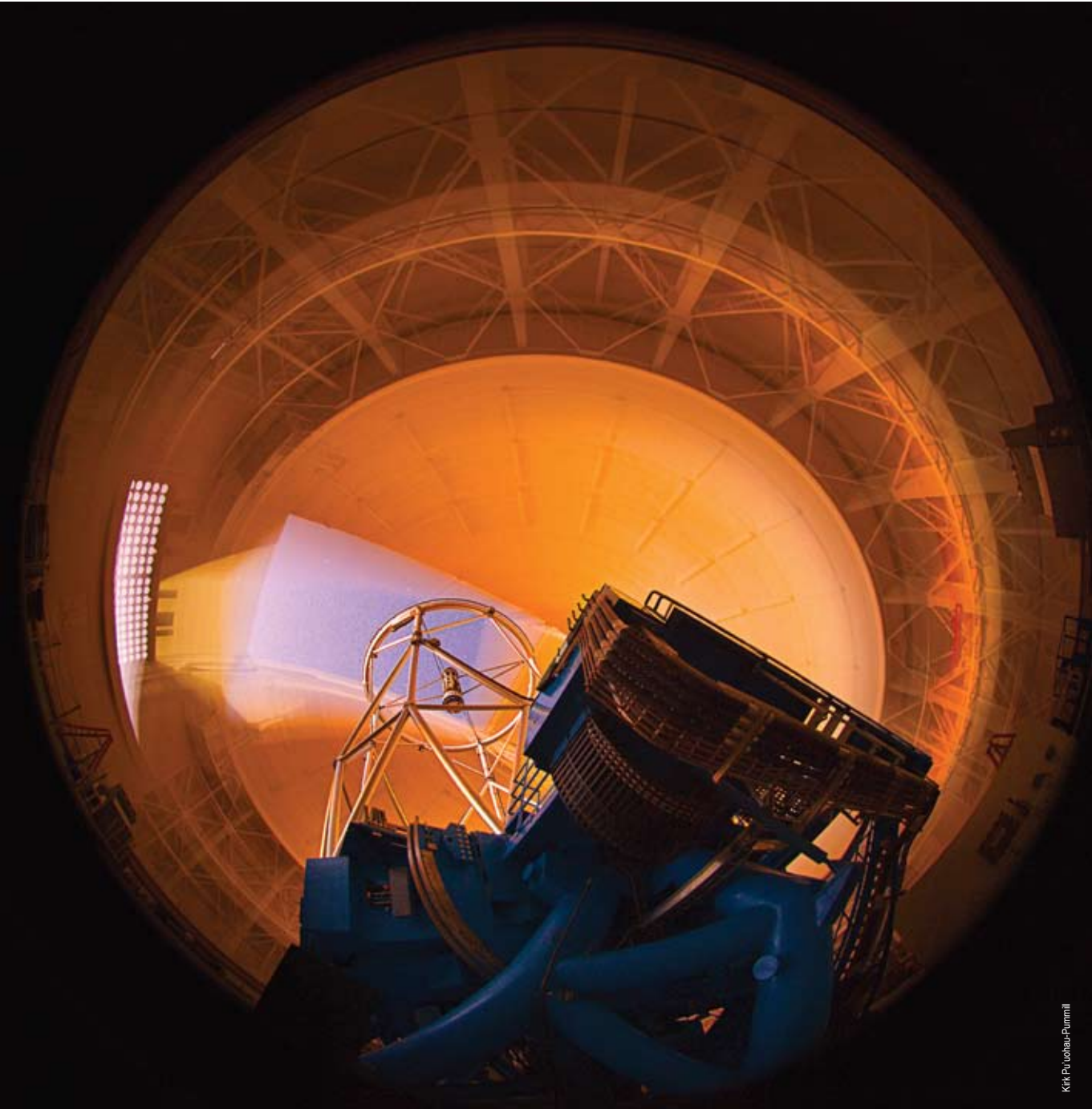


Figure 1 – The Gemini telescope seen from the observing floor.