

CURIOSITY ON MARS: EXPERIENCING THE RED PLANET IN THE FULLDOME / IMMERSIVE PLANETARIUM ENVIRONMENT. E. F. M. Albin, Department of Space Sciences, Fernbank Science Center, 156 Heaton Park Drive, Atlanta, GA (USA) / ed.albin@fernbank.edu.

Introduction: With the arrival of the Curiosity Rover on Mars, public interest / enthusiasm for the red planet is at an all time high. In order to meet this demand, Fernbank Science Center's planetarium is featuring a live weekly update about Mars in conjunction with our regular Saturday morning "Sky Tonight" planetarium program. Recently, the planetarium was outfitted with a new fulldome projection system, which can be used to project Mars Science Laboratory (MSL) images in such a way as the audience will experience Mars in a fulldome or immersive environment.

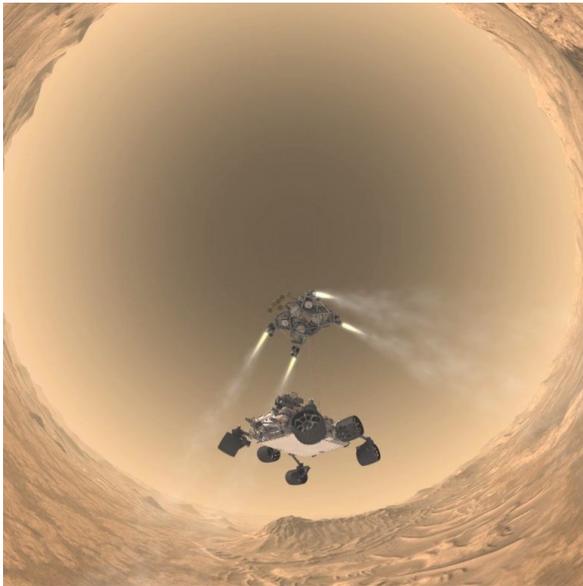


Figure 1. Fisheye dome master rendering of Curiosity Rover landing on Mars. Original image courtesy of NASA.

FSC Fulldome System: Installed in December 2012, our new fulldome system (produced by e-Planetarium of Houston, TX) allows audiences to appreciate Mars in a new way. It is now possible to take imagery from the Curiosity Rover and present it in such a manner that images cover the entire dome. Previously, for the images used in our programming, the planetarium utilized antiquated slide projectors that placed a picture on only a small segment of the dome. The new digital immersive projection system throws extraordinarily bright light onto a spherical mirror tuned to the exact shape of our dome. Such renderings have an extraordinary effect on the audience – giving the illusion of actually being on Mars. Thus, we find that

visitors are more willing to digest recent scientific finding about the red planet. Although the new fulldome system does not replace our planetarium's iconic Zeiss star projector, it is used to compliment it. Integrating images and video with the starfield has always been a bit awkward, but now our immersive projection system makes it seamless.

Image Rendering for Fulldome Projection: Our projection system requires that "dome master" fisheye or panorama imagery be distorted so that what is projected on the dome appears correct. Inexpensive off the shelf software is available to accomplish this task. "IMG Warper for Windows" is one example of available software that can render images for use with a spherical mirror projection system. Another software package called "DomeFX" digitally modifies images by adjusting for planetarium dome curvature, allowing the creation of dome master frames that can be sequenced in video production software such as "Adobe After Effects." For instance, a Rice University team rendered a fulldome version of NASA's "Curiosity Trailer" landing video, with various resolution versions that can be downloaded from this URL: http://earth.rice.edu/trailers/fisheye_trailers/.



Figure 2. Atlanta's Fernbank Science Center's Zeiss planetarium and associated fulldome / immersive theater.