



Séminaire organisé par

**AIM & Le service d'Astrophysique
CEA/DSM/Irfu**



ATTENTION JOUR ET HEURE INHABITUELS

**HOW WILL THE JAMES WEBB SPACE TELESCOPE MEASURE
FIRST LIGHT, REIONIZATION, AND GALAXY ASSEMBLY: THE NEW
FRONTIER AFTER HUBBLE**

ROGIER A. WINDHORST

JWST Interdisciplinary Scientist,

(Arizona State University, USA)

I will review how the 6.5 meter James Webb Space Telescope (JWST) --- after its launch in 2018 --- can measure the epochs of First Light, Reionization, Galaxy Assembly, and Supermassive Black-Hole Growth, building on recent results from the Hubble Wide Field Camera 3.

First, I'll briefly summarize the significant technical progress on the design and fabrication of JWST: more than 98% of its launch mass has been built, passed final design, or is being built as of fall 2015. All JWST's 18 flight mirrors have been gold-coated with an optical performance that meets or exceeds specs. All of JWST's scientific instruments were delivered to NASA GSFC and tested from mid 2013--2015. I will briefly summarize the path from today till launch, planned with an Ariane V for October 2018.

Next, I will briefly review the search for the first galaxies at redshifts $z=9-11$ (age ~ 0.5 Gyr) in the Hubble UltraDeep and Frontier Fields, and their current limitations. I will show what combination of area, depth, and wavelength coverage are needed for JWST to detect a sufficient number of First Light objects, and to measure their evolving luminosity function (LF). JWST will map the epoch of First Light through the so-called Population III-star dominated objects at redshifts $z\sim 8-15$, and its transition to the first Pop II stars in dwarf galaxies at $z\sim 9$. JWST will measure the evolution of the Schechter LF at $z\sim 6-15$, when the Universe was 0.3--1 billion years old. A steep faint-end of the dwarf galaxy LF may have provided the ultraviolet flux needed to start and finish cosmic reionization. JWST will also image the host galaxies of the first quasars at $z>6$ in detail.

Vendredi 11 décembre 2015

11h00 Salle Galilée bât 713 - Orme des Merisiers

Un café précèdera le séminaire