

The Department of Theoretical Physics presents:

**Daniel Angles**

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talking about

# Cosmological Zoom Simulations of $z = 2$ Galaxies

The background of the slide is a cosmological zoom simulation of  $z = 2$  galaxies. It shows a complex, filamentary structure of gas and stars, with bright yellow and orange regions representing star-forming areas. The simulation is zoomed in to show individual galaxies and their internal structure. The text is overlaid on this background.

In the first part of my talk I will present high resolution cosmological zoom simulations that focus on the impact of galactic outflows on the morphological, dynamical, and star formation properties of individual  $z = 2$  galaxies. I will show that strong winds are required in order to maintain high gas fractions, redistribute star-forming gas over large scales, and increase the velocity dispersion of simulated galaxies, in good agreement with the large, extended, rotation-dominated yet turbulent star-forming disks revealed by spatially- and spectrally-resolved  $H\alpha$  line observations of  $z = 2$  galaxies. In the second part of my talk I will show how these simulations can be used to constrain the growth of supermassive black holes at the centers of galaxies and what we can learn from the observed correlations between black hole mass and properties of the host galaxy.

Wednesday, December 19, 2012 @ 15:00h, Sala 201 in Modulo C-15