



PHYSICS AND ASTRONOMY COLLOQUIUM

Dr. Crystal Martin

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“The Adventures of Cosmic Baryons”

Abstract

Cosmological models have been spectacularly successful in describing the assembly of dark-matter in the Universe, but they lack the resolution to calculate the cosmic history of the gas accreted by galaxies. Yet, how these baryons cycle in and out of galaxies, and what they do while they are there, are key questions in understanding the life cycles of galaxies. Specific challenges include accounting for the dispersal of heavy elements in the intergalactic medium, suppressing star formation in massive structures and dwarf galaxies, and explaining the shift in star formation activity from massive galaxies towards less massive galaxies with cosmic time. Gas heating by supernovae and supermassive black holes plays an important role in most proposed solutions to these problems, but again simulations lack the resolution to capture these "feedback processes" directly. I will show how observations are beginning to empirically calibrate the circulation of gas between galaxies and the circumgalactic medium, and trace the ejection of elements produced by stellar nucleosynthesis. Come learn about the wild ride of cosmic 'metals' and 'baryons' as they cycle in and out of galaxies.

Wednesday, February 22, 2012

3:30 p.m.

Bob Wright Centre

Room A104