

19 Dicembre 2012

ore 15.00

Aula Mancini

Palazzo della Carovana

Piazza dei Cavalieri

# Colloqui della Classe di Scienze

Anno Accademico 2012/2013



SCUOLA  
NORMALE  
SUPERIORE

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*From Chemistry to Galaxies:  
Astroarchaeology*

## ABSTRACT

During the Big Bang only light chemical elements (H, D, He, Li) were formed, whereas the stars formed all the other elements. Galactic chemical evolution deals with the formation and evolution of the chemical elements in galaxies. By studying the present time distribution of the abundances of the most common chemical elements in stars and gas we can reconstruct the history of formation and evolution of galaxies. This approach is called astroarchaeology. I will describe the basic ingredients and the methods adopted to build chemical evolution models of galaxies of different morphological type. It will be shown how some particular abundance ratios, such as O/Fe, can be used as cosmic clocks and infer the typical timescales for the formation of galaxies. I will describe the results of models for the Milky Way galaxy, for the dwarf spheroidal galaxies of the Local Group and for large spheroids such as elliptical galaxies. I will show how different abundance patterns result from different star formation histories and how abundance ratios can be used to reveal the nature of high redshift objects. Finally, cosmic chemical evolution, in an unitary comoving volume of the universe, will be discussed.