TRACCIA 3

1) Descrivere l'istituto della discrezionalità amministrativa ed evidenziare la differenza con la discrezionalità tecnica;

2) Illustrare l'armonizzazione dei sistemi contabili e degli schemi di Bilancio delle Amministrazioni Pubbliche, con particolare riguardo agli Enti Pubblici di Ricerca;

3) Illustrare il ciclo di vita di un progetto di ricerca e le sue fasi;

4) Descrivere le principali periferiche di input per un Personal Computer;

5) Traduzione testo: The Universe is getting out of breath;

THE UNIVERSE IS GETTING OUT OF BREATH

A new study of more than 200,000 galaxies, from the ultraviolet to the far infrared, has provided the most comprehensive assessment of the energy output of the nearby universe. It confirms that the radiation produced by stars in galaxies today is only about half what it was two thousand million years ago. This overall "fading" reflects a decrease in the rate of star formation via the collapse of cool clouds of gas. It seems that the universe is running out of gas and slowly dying.

It is well known to astronomers that the rate of star formation in the universe reached a peak around a redshift $z = 2$, when the universe was about 3 Gyr old. Over the subsequent 10 Gyr until now, the production of stars in galaxies has steadily decreased.

Because the most massive stars are also the most luminous ones and have the shortest lifetimes, the energy output of a galaxy is closely related to its star-formation rate. Indeed, some 100 million years after the formation of a star cluster, its brightest stars would have exploded as supernovas leaving only the lower-mass stars, which are much less luminous.

Although the fading trend of the universe has been known since the late 1990s, measuring it accurately has been a challenge. Part of the difficulty is to gather a representative sample of galaxies at different redshifts and to account properly for all biases. Another complication comes from the obscuration by dust in the galaxies, which absorbs ultraviolet and visible radiation and then re-emits this energy in the infrared. A way to overcome these difficulties is to observe the same region of the sky at many different wavelengths to cover fully the energy output. This has now been achieved by a large international collaboration led by Simon Driver from the International Centre for Radio Astronomy Research (ICRAR), University of Western Australia.

The new study therefore states that the shining, glorious days of the universe are now long past; instead, it will continue to decline, sliding gently into old age, an age of quiescence.