

# REPORT ON THE LECCE CONFERENCE ON SUPERNOVAE

F. BERTOLA

*Dept. of Physics, The University of Lecce, Italy*

From May 7 through May 11, 1973 an International Conference on Supernovae was held in Lecce, organized by the local University. About one hundred participants, from eighteen countries, attended it. The basic topics covered were the following:

- results and techniques of supernova surveys,
- photometric studies of supernovae,
- spectra of supernovae and their interpretation,
- statistics of supernovae,
- supernova remnants,
- theories on supernovae and supernova remnants.

The number of contributed papers was forty-six and the proceedings have been published in *Cosmovici* (1974).

Since the previous conference dealing with the same subject was held in September 1963 at the Haute Provence Observatory, the Lecce Conference marks the enormous progress made in the past decade.

The reviews of the supernova surveys, which are carried out at different observatories, have shown that a more careful planning of the fields to be surveyed could lead to more useful data. In order to use the supernovae as distance indicators, premaximum observations are of extreme importance. This can be obtained by a closer spacings of the patrol plates. The need of discovery of fainter supernovae and of studying spectra and light curves to fainter magnitudes has been stressed.

Until a few years ago only two types of supernovae were recognized. Recently Zwicky introduced the additional types III, IV and V. At the Lecce Conference we learned that several subclasses are present within these types. As an example the differences in the light curves of type I supernovae, found at Asiago, has to be quoted. The fact becomes very important when it is taken into account that these differences are probably related to the stellar population associated with the supernova.

The successful attempt to identify the lines in the spectra of type I supernovae is one of the main results achieved in the recent years, together with the estimation of the matter ejected and of the physical conditions in the supernova shell.

Completely new types of observations of supernovae were presented in Lecce. The report of the first detection of strong radio emission from a supernova which appeared two years ago in another galaxy has opened a new field of research, which could lead to a better understanding of the pulsar phenomenon.

The study of the supernova remnants has received great stimulation by the X-ray data, which, together with the optical and radio data, give a new look into the problem. The analysis of the structure of some remnants with the satellite Copernicus currently in orbit, seems very promising. At the same time the elucidation of the detailed

structure of magnetic fields and cosmic ray particles in supernova remnants from the measurements made with new powerful radiotelescopes is a recent contribution.

On the theoretical side the following has to be mentioned: (i) the first beginnings of an understanding of the physics of the supernova explosion and the kind of stars in which it occurs; (ii) the construction of very detailed models of the structure of supernova remnants and their radio emission; (iii) the construction of more detailed models for the formation of pulsars and the way in which pulsars accelerate cosmic rays and generate magnetic fields which energize the supernova remnants.

### Reference

Cosmovici, C. B. (ed.): 1974, *Supernovae and Supernova Remnants*, D. Reidel Publ. Co., Dordrecht.