which is enveloping the nucleus (circles in Figure 8) does not fit as easily with such a model. Other types of grains may be required, perhaps of higher albedo. Water ice may be considered.

Reference

Dollfus, A., Suchail, J.-L., Crussaire, D., Killinger, R. (1987): Comet Halley: Dust characterization by photopolarimetry. To be published in Proc. ESA Symposium Exploration of Halley's Comet, Heidelberg, FRG, 27–31 Oct. 1986.

MESSENGER INDEX

An index of all contributions published in the Messenger from No. 1 to No. 46 (1974–1986) has been compiled and will be distributed with this issue of the Messenger.

The index consists of three parts. The first part – the Subject Index – lists the contributions grouped by 20 subject titles. In the second part – the Author Index – the articles are listed by authors, in alphabetical order. The third part contains the Spanish summaries, grouped by subject titels and in chronological order.

Although the division of the contributions into 20 subjects and their assignment to these subjects may not be perfect, it is hoped that the index will help the reader to obtain a better overview of the articles which have appeared in the Messenger and permit him to find them more easily.

In the future, annual indexes will be compiled.

Multiple Object Redshift Determinations in Clusters of Galaxies Using OPTOPUS

A. MAZURE and D. PROUST, DAEC, Observatoire de Meudon, France
L. SODRE, IAG, São Paulo, Brasil
H. CAPELATO, São Jose dos Campos, Brasil
G. LUND, Département d'Astrophysique de l'Université de Nice, France

Introduction

From recent developments of observational astronomy, the overall view of the structure of the universe appears to be very different from the homogeneous and isotropic one claimed by traditional cosmology. The hypothesis of long, interconnected linear filaments or even large "bubbles" characterizing the concentration of galaxies now seems to be well established, these regions being separated by large voids empty of bright galaxies.

One of the fundamental factors in the understanding of such formations is the determination of their structure in the third dimension as opposed to their flat "projected" appearance.

If the redshift determinations represent virtually the only tool giving access to the third dimension, they are also essential to the understanding of structural dynamics because they provide us with a wealth of information concerning the velocity dispersion in particle systems. Radial velocity measurements are essential to the understanding of structures such as galaxy clusters, as dynamic analysis of their velocity distribution can lead to mass determinations and to an estimate of the missing mass in the universe.

Analyses of some Abell clusters have recently been published; as an example it has been shown that the A496 cluster has a complex structure formed essentially by a main cluster (or main subcluster), and another small sub-cluster,

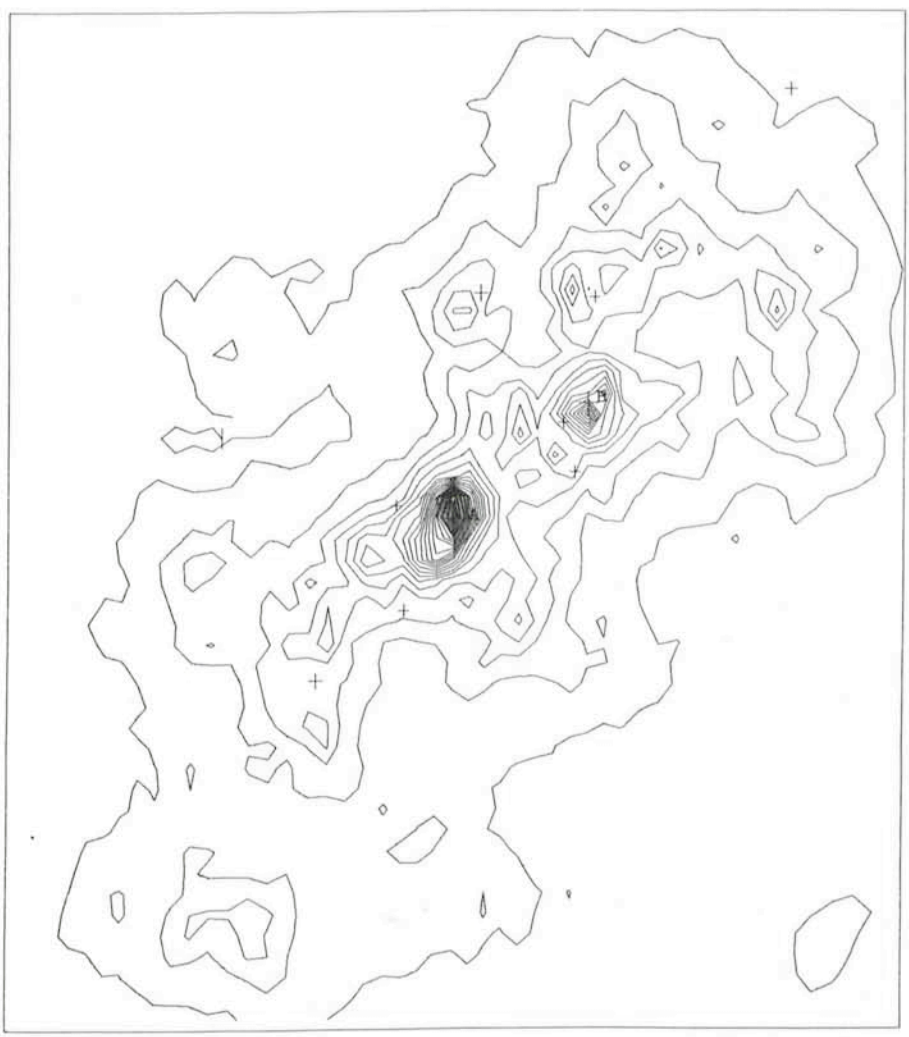

Figure 1: *Isocontours of SC2008-565. The ten brightest galaxies are plotted. The radial velocities of A and B are 16,490 and 16,890 km/s.*