

– IHAP to IHAP communication directly with data compression. (The data compression programme extracted the data directly from the IHAP data-base and also optionally cut them before transmission.)

The transmission of full raw CCD images ( $320 \times 512$  pixels) took about 7 minutes. However, images were normally either cut with threshold levels or truncated to a subset of the full image. This allows the reduction of the size of images to some 10–20%, even without (or before) using data compression.

It is interesting to note anyhow that operationally, the data transmission times went “unnoticed” as, typically, data were sent across the link while the next CCD exposure was taking place.

Data transmission does not clash either with sending commands to the instrument or telescope, as this involves a short exchange of messages on the line.

- An interactive message system was also used to send/receive messages from a dedicated console. This was constantly active and working together with all other operations on the link.
- A voice channel was available as an alternative to the data channel. This is useful in situations like start-up, rebooting, etc. and was routinely used, e.g. during exposures to obtain information in a more direct and informal way than via a message system.

## Conclusions

The operation from La Serena proved to be feasible both for the spectrographic mode and imagery. However, particularly for spectroscopy, the addition of a device to digitize the field image of the telescope, and transmit it to the remote site, which was not yet available at this stage, is planned and will be necessary.

## Tentative Time-table of Council Sessions and Committee Meetings in 1984

October 8–9	Scientific Technical Committee, Chile
November 13–14	Finance Committee
November 27–28	Observing Programmes Committee
November 28	Committee of Council
November 29–30	Council

All meetings will take place at ESO in Garching unless stated otherwise.

## Next Step

The next logical step is to observe from Garching. Various technical alternatives to do this will be possible. They basically are:

- Direct link via satellite transmission and an antenna in La Silla.
- Direct link via a satellite link from Santiago shared by ESO, plus a dedicated telephone line to Santiago.
- A dedicated telephone line to Santiago plus access from Santiago to a public international computer network. In this case, in practice, data would be routed via a computer in Santiago to a USA computer via a communications satellite link and from there to Europe.

We expect that this last possibility will become available in a few months as a service. A test with this might be relatively cheap to run and would take us one step further in the direction of having remote control for the NTT.

We would like to thank M. Ziebell for his contribution to the project, P. Biereichel for his data compression programme, D. Hofstadt and the TRS staff for handling the lease contracts with Entel and for the support in Chile.

# Oxygen Abundances in Metal Poor Stars

*R. G. Gratton and S. Ortolani, Osservatorio Astrofisico di Asiago, Italy*

## Introduction

The study of the chemical composition of old stars may give us interesting information about the early phases of evolution of our Galaxy. The Big Bang may have formed only a trace of elements heavier than Be. It is quite consequent that the early generation of stars in our Galaxy (and in any galaxy) must have formed with a low metal abundance; the metals were then formed in the interior of these early stars and returned to the interstellar medium through stellar winds or supernova explosions. Successive generations of stars formed with an increasing metal abundance. This picture is substantiated by the relation existing between metallicity and galactic orbit eccentricities shown by Eggen et al. (1962); this is interpreted as the interaction between a fast collapse of the gas component of the galactic halo and the increase of the mean metallicity of the same gas.

Many points are still obscure in this picture; the absence of observations of very metal poor stars seems to indicate that the Initial Mass Function (IMF) may have been different in the past, being strongly biased to massive or even super-massive stars ( $M > 100 M_{\odot}$ ). The evolution of these candidates to the first generation of stars is far from being clear (see e.g.

Woosley et al., 1982); there is the strong suspicion that they may form large quantities of Oxygen but very small amounts of Iron. On the other side, type I supernovae are probably efficient Fe makers, while there is no available indication of the presence of Oxygen in their ejecta. As type I supernovae do not follow the arms of spiral galaxies and are present also in ellipticals, we think that the lifetimes of their progenitors are long. Thus the timescale of production of Oxygen (and some other light element) may be substantially different from the timescale of Iron (and other heavy elements) production.

It seems thus interesting to study the behaviour of the O/Fe ratio with time. Unfortunately it is quite difficult to derive sufficiently accurate ages for population II objects. We may however assume that age is correlated with metal abundance. This hypothesis is probably good in the solar neighbourhood, though it may be dangerous to extend it naively to other galactic regions.

## Observations and Analysis

Early attempts to derive Oxygen abundances for metal poor stars have been made by Sneden et al. (1979) and Clegg et al.