visual inspection and setting of the images. The observations of the solar limb is done by take
the sequence of the parallel arcs defined by the limb itself, since we do not any longer move the
Wollaston bi-refringent that permit to compensate the movement on zenith distance. The comercial
camera COHU, with a 699 x 580 pixels CCD chip, together with the comercial interface “CYCLOPE”
makes possible to send the CCD images to the RAM of a PC 486 every 0'.020, synchronized with the
time scale used by the “CHRONO” chip, produced in France. This way of observation makes possible
to record 50 direct images and 50 reflected images during the Sun transit.

A filter to diminish the chromatic aberrations is
used in order to cut the excess of red in the spectrum, so the pass band is rather close to the visual one.

The procedure of reducing the observations is just
the same as the one used in the OCA. This project is
part of the scientific co-operation between the
Governments of France and Brazil.

CCD MERIDIAN OBSERVATIONS

P. Benevides-Soares 1, Y. Requiere 2, and
R. Teixeira 1

In the framework of an agreement between the
Bordeaux and São Paulo observatories, a CCD
micrometer, to be adapted to the transit circles of
both institutes, was designed and constructed in
Bordeaux. The first micrometer started initial tests
in Bordeaux in 1994 and was moved to São Paulo
in June 1995. The main technical features are the
following: CCD Thomson 7895Am with 512 x 512
square 19 micron pixels. It is operated on the TDI
mode, such that the charges are moved at the sidereal
rate. This entails an integration time identical to the
interval needed for a star image to cross the whole
chip surface. The CCD is cooled down to −40 C, by
means of a thermocouple system. The comparison of
observations of the same field in successive nights
shows that the positional accuracy is about 0.07" in
both coordinates, for the optimal magnitude range,
i.e., V = 9 to 14. A more detailed analysis, which
allows for slow variations of anomalous refraction,
points to an intrinsic accuracy of 0.94", limited by
electronic and photon noise. It was also possible to
compare observations of a field around 3C273, done
at the two sites: from a 20-night series at Bordeaux
and 10 at São Paulo, the final star positions showed
an agreement of ± 0.05" in both coordinates. The
magnitudes in the instrumental band, which is close
to the V band, are obtained to within 0.05. A second
micromer, with a larger 1024 x 1024 CCD chip is,
presently under construction.

REFINED LABORATORY IMAGES AND
FLIGHT RESULTS OF THE HARD X-RAY
CODED-APERTURE TELESCOPE TIMAX

Flavio D’Amico 1, João Braga 1, and
Thyrso Villela 1

We present refined laboratory images obtained
with the TIMAX (“Telescópio Imagemador de Raios-
X”) hard X-ray coded-aperture experiment. The
images were produced by illuminating the detectors
with 60 keV photons from a 241Am radioactive
source placed 45 m away from the detector
plane, in the center of the field of view. We
show the advantages of using a subtracting mask-
antimask technique (combined with multiplicative
flat-field techniques) to recover signal-to-noise ratio
lost due to systematic non-uniformity in the
background measured by the 35 NaI(Tl) detectors.
The experiment was flown from the town of
Birigüi, SP, Brazil, in June 8th, 1993 onboard a
186 000 m³ stratospheric balloon, and remained at
an atmospheric depth of ~ 2 gm cm⁻³ for ~ 8 hours.
We show the sensitivity of the experiment, calculated
using the measured background spectrum at balloon
altitudes, and the capabilities of the experiment for
obtaining 30-100 keV images of astrophysical source
fields.

SEARCH FOR ASTRONOMICAL SITES
USING METEOROLOGICAL
SATELLITE IMAGES

Jorge R. Ducati 1,3, Renan S. Leitão 2, and
Francisco H.S. Magro 2,3

In the context of a project to locate suitable sites
for the installation of a new University telescope, we
developed techniques to use images from meteoro-

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