



Figure 8: Values of Doppler parameter  $b$  and column density  $N$  obtained by the fitting procedure on Ly $\alpha$  lines with different fit intervals. Lozenges are for limits set at half intensity of the line, crosses are for the same lines when the fit is over the whole line width. Left:  $b = 25$  and  $\log N_{\text{HI}} = 13.6$ ; right:  $b = 25$  and  $\log N_{\text{HI}} = 15$ . For clarity, on the right only 50 representative points are plotted. Small boxes show the respective line profile, with the different intervals considered.

may be computed by MINUIT either by inverting the covariance matrix (*HESSE* command) or by scanning the  $\chi^2$  hypersurface around the minimum (*MINOS* command) until a  $1\sigma$  offset has been reached. In Figure 6 we plot the observed distributions of the errors obtained with both methods for 1000 simulated lines of  $b = 20$  and  $\log N = 15$ . The peak value of the distributions is in good agreement with the observed dispersion in fitted values (see Fig. 4). Clearly *HESSE*, due to its symmetric nature, cannot account for the asymmetric distributions such as those shown in Figure 4. This is better accomplished by *MINOS*, as is shown in Figure 6, where the two error distributions are compared: as can be seen, the peaks and the shapes of the *MINOS* errors are not symmetric. We have also found out that both of them are sometimes inaccurate: the first one, for inexplicable reasons, provides implausibly small values in a significant fraction ( $\sim 15\%$ ) of the lines (see Fig. 6, dotted line), while the second is not computed in a small fraction of cases ( $\sim 5\%$ ). Thus, we suggest the performance of both computations, to check for consistency of the results.

### Fit of metal systems

We have also verified that the simultaneous fit of different metal lines does significantly increase the precision attainable in the fit. We have performed a set of fits on simulated CIV doublet spectra, again for different values of  $b$  and  $N$ , at  $S/N = 10$ . A self-explanatory example for two of them is reported in Figure 7. The results of our simulation clearly indicate that the simultaneous fit of different ionic transitions should be exploited whenever possible.

### Limits of the fit region

As has been pointed out by Rauch et al. (1993), great care must be taken when choosing the limits on which the  $\chi^2$  is computed.

Following Rauch, we quantified the systematic effects by fitting the same set of lines with different limits, repeating this test for different  $b$  and  $N$  values. When the limits are chosen inside the line (i.e. before the line has reached the continuum) two effects arise. The first is an increase in the noise on the equivalent

width, due to the reduced number of pixels: this reflects into a larger dispersion of the fitted values. Furthermore, severe systematic effects may appear, in particular in the fits of saturated lines, which depend strongly on the line profile close to the continuum level. Thus, *the limits must always be chosen as wide as possible*, in order to follow the line profile up to the continuum. Two examples of the simulated fits are shown in Figure 8.

### Improvements

The Lyman context is still an evolving tool. Some improvements are already being implemented, and will be released with the future versions of Midas. Among these, the possibility of drawing plots in the velocity space, and more commands for the research of metallic systems. The convenience of a GUI version is currently being evaluated.

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P. Ballester  
e-mail: [pballest@eso.org](mailto:pballest@eso.org)

## Astronomers in Chile Meet at ESO in Vitacura

BO REIPURTH, ESO-Chile

During September 1994 the Astronomy Support Department of ESO-Chile moved its offices and facilities from the La Silla observatory to ESO's Vitacura premises in Santiago. Here a new institute of astronomy has emerged and is now successfully operating. For the past two decades ESO astronomers have had their work place at La Silla and have conse-

quently been fairly isolated. With our move to Santiago this situation has significantly improved, and ESO is now able to a much larger degree to be a partner in the wider astronomical activities in Chile.

To celebrate ESO's new presence in Santiago and to further the possibilities for increased scientific ties between the various astronomical institutions in Chile, a

three-day workshop *Astronomy in Chile* was held 18–20 April in Vitacura. All astronomers working in Chile were invited, and the workshop gave the about 50 attendees an opportunity to learn about the wide range of astronomical interests currently pursued within Chile. Except the staff working those days at La Silla, Cerro Tololo and Las Campanas, and those

travelling abroad, virtually all astronomers in Chile were present. The accompanying list gives an alphabetical list of the speakers and the titles of their talks, which were held in either English or Spanish. Chilean astronomy is principally concentrated in Santiago, but recently efforts from several universities in other cities have been made to develop astronomy, and new groups are emerging in Antofagasta, La Serena and Concepción, led by Luis Barrera, Sergio Char and Ronald Mennickent, respectively.

On the third day of the workshop, a special session was chaired by Mark Phillips of CTIO, who gave an introduction to the growing problem of light pollution that threatens all observatories in the world. He enumerated a number of actions that must be undertaken to safeguard the darkness of the night sky in Chile. During the discussion that followed it was clear that here is a problem that will require joint efforts from all the groups affected.

The workshop happened to coincide with the signing in Bonn of the supplementary agreement between ESO and Chile, and Daniel Hofstadt was able to break the good news to the audience. The workshop unfolded in a positive and collaborative spirit, and we all enjoyed the opportunity to share with each other our scientific results. Even the weather collaborated, and several warm and sunny autumn days allowed the conference lunches to be held in the gardens around the institute. The workshop ended with universal agreement that more such pan-Chilean astronomy meetings would be welcome.

### Talks Presented at the Astronomy in Chile Workshop 18–20 April 1995

Thomas Augusteijn (ESO): V485 Cen: A Dwarf Nova with a 59 Min Orbital Period



Luis Barrera (U. Católica del Norte): Fe II, Fe III and Mg II lines in the Spectra of Be Stars  
 Patrice Bouchet (ESO): What's new about SN 1987A? (and Future Studies of Dust around SNe)

Leonardo Bronfman (U. de Chile): Molecular Clouds and Massive Star Formation in the Galactic Disk

Luis Campusano (U. de Chile): Large Quasar Groups

Eleazar Carrasco (U. Católica): CCD-Photometry of the Brightest Galaxies in Abell Clusters

Sergio Char (U. de La Serena): Studies of Ca II emission in Fast Rotating Stars

Pascal Fouqué (ESO): The DENIS 2 mm Sky Survey: Introduction and Present Status

Guido Garay (U. de Chile): Recently Formed Massive Stars: Molecular and Ionized Environments

Wolfgang Gieren (U. Católica): Studies of Cepheid Variables in the Magellanic Clouds

Roland Gredel (ESO): Molecular Hydrogen in Herbig-Haro Objects

Adelina Gutierrez/Hugo Moreno (U. de Chile): A Diagnostic Diagram for Planetary Nebulae and Symbiotic Stars

Eduardo Hardy (U. de Chile): The Stellar Populations of Fornax

Steve Heathcote (CTIO): The Herbig-Haro 47 Jet

Leopoldo Infante (U. Católica): A Survey of Faint Pairs of Galaxies

William Liller (Inst. I. Newton): Observations of Novae, Dwarf Novae and False Novae

Gautier Mathys (ESO): Magnetic Field Diagnosis in Ap and Bp Stars

Jorge May (U. de Chile): Molecular Clouds in the Outer Galaxy

José Maza (U. de Chile): Calan-Tololo Survey: Quasars and Seyfert Galaxies

Duilia de Mello (CTIO): Mixed Pairs of Galaxies  
 Jorge Melnick (ESO): Star Formation in Cooling Flows

Jorge Melnick (ESO): Progress at La Silla and Paranal

Ronald Mennickent (U. de Concepción): Understanding Strongly Eruptive Dwarf Novae

Fernando Noel (U. de Chile): Sun Semidiameter Survey with a Danjon Astrolabe

Lars-Aake Nyman (ESO): The Kinematics of the Bipolar Reflection Nebula IC 2220

Patricio Ortiz (U. de Chile): Search of Quasars using CCD's and Objective Prism Techniques in Widefield Telescopes

Luca Pasquini (ESO): Lithium Abundances in the Globular Cluster NGC 6397

Mark Phillips (CTIO): First Results from the High-Z Supernova Search

Hernan Quintana (U. Católica): Cluster and Galaxy Group Mergers

Bo Reipurth (ESO): Herbig-Haro Jets and Molecular Outflows

Miguel Roth (Las Campanas Observatory): The Magellan Project

Monica Rubio (U. de Chile): Molecular Gas in the Magellanic Clouds

Maria Teresa Ruiz (U. de Chile): Cool White Dwarfs

Ricardo Schmidt (CTIO): Present Instrumentation Projects at CTIO

Robert Schommer (CTIO): The Motion of the Local Group with Respect to Distant Supernovae

Hugo Schwarz (ESO): M2-9: Dusty Mirrors in the Sky!

Malcolm Smith (CTIO): The Gemini Project

Roger Smith (CTIO): CCD's and Controllers at CTIO

