

15th EGAS

The 15th annual meeting of the European group for Atomic Spectroscopy was organized by Professor E. Bernabeu and the Sociedad Espanola de Optica in the first week of July 1983 in Madrid. About 180 participants from 13 European countries (from Spain to Poland and from Israel to Norway), the USA, Canada and Australia met together in the magnificent auditorium at the Institut de Optica.

The organizing committee divided the four-day programme into a small number (4) of invited talks (1 hour), many short contributed papers (15 minutes) and several poster sessions. The large number of short communications is traditional at EGAS. In particular, it allows young people to present their work verbally to their colleagues.

The main advantages (universal application, ...) of classical optical techniques (with cooled hollow cathode, sliding spark, HF-excited light sources and pressure-scanned Fabry Perot interferometers or high resolution spectrometers) for measuring term values, hyperfine and Zeeman lines, isotope shifts, diamagnetic and Paschen-Back effects and transition probabilities were well-illustrated by about 15% of the communications. Papers on applications of ion traps, beam-foil and synchrotron radiation light sources to spectroscopy, lifetimes and quantum beats gave insight into the possible uses of these techniques. With the increasing trend towards the use of lasers in high resolution spectroscopy, the number of communications concerning laser studies has increased also. Papers on fluorescence, optogalvanic and polarization effects and two-photon spectroscopy for measurement of fine, hyperfine and Stark splittings, Lamb shift, Rydberg spectra and for studies of atomic or molecular

collision processes were presented. Thus three of the four invited talks were on laser related topics.

The review of M. Elbel dealt with recent advances in laser spectroscopy for studies of "molecular collisions". Monochromatic radiation is used to detect molecules in well defined velocity states due to the Doppler shift of their transitions. Differential cross-sections for level-to-level transitions can be ascertained in supersonic beams.

R. Hallin reported on recent studies of atomic structure using laser excitation of fast beams from ion accelerators. Both crossed and collinear configurations were discussed in detail. These methods give cascade-free atomic lifetimes, high resolution hyperfine structure and isotope shifts, and precise transition energies in highly charged ions.

E. Arimondo gave a thorough review of the experimental and theoretical aspects of heating and cooling neutral atoms. In the process of absorption or emission of light by an atomic system the photon momentum modifies the velocity. By a proper choice of the light frequency and the direction of propaga-

tion, the photons may control the motion of the atomic beam. Arimondo concentrated mainly on the production of very slow atoms.

In his review of vacuum ultraviolet spectroscopy, N. Spector showed that the use of recently-introduced devices such as the modified heat pipe and flash pyrolysis lamp, could furnish new information concerning line series, inner-shell excitation and photoabsorption. Among adapted theoretical methods, the semi-empirical Racah Slater method has proved itself very useful.

Theory of atomic structure, new techniques, metrology and instrumentation completed the scope of the Conference.

Summaries of contributions are published in *Europhysics Conference Abstracts*, Volume 7c. They are classified under the following topics: laser spectroscopy; collisions, line shapes; relativistic effects; optical pumping and related topics; hyperfine structure and isotope shifts; high field effects; lifetime and transition probabilities; term analysis; new techniques, metrology; calculations of electronic configurations.

J. Désesquelles, Lyon

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Chair of Physics at Imperial College of Science and Technology

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