Welcome to CIEMAT.
L3 Cosmics meeting.

CIEMAT, Madrid,2002-05-16

About Madrid.

- **Madrid** was founded by Mohamed I, (830) to protect from the christians the accesses to Toledo. Alfonso VI conquered it in 1083 , prior to the conquest of Toledo.
- **In 1561** Felipe II made it the capital (5000 inhabitants) mainly because its good weather and salubrity conditions.
- **In 1601** Felipe II was convinced (50,000 ducat) to shift capitality to Valladolid, but the unhealthy conditions of this city and a counter-offer of 200,000 ducat per year changed the resolution of the king who made Madrid the permanent capital of Spain.
- **The development of Madrid** was in most part the action of Carlos III, popularly known as ”The Major of Madrid”. (i.e. Puerta de Alcala, Gardens of Retiro,...) The french influence is patent everywere.
- **One of the painters** that reflected best the Madrid life in the first part of the XIX century was Goya. (“La Pradera de San Isidro” in the Museo del Prado...)
- **The symbol of Madrid** is a brown bear embracing an strawerry tree (Oso y Madro no) because both were abundant in the woods encircling the city some centuries ago.

About CIEMAT.

- **The CIEMAT** (Centro de Investigaciones Energeticas, Medio Ambientales y Tecnologicas) was not born with the present name.

- **Its antecedents** lie on the JIA (Junta de Investigaciones Atomicas,1948) (Esteban Terradas,Juan Vigon, Otero Navascues) This organization, quite reserved (say, secretive), had as main objetives the study of the nuclear energy technology and explotation of the Uranium sites in Spain (Abundant in the Eastern mountains, from Pirenees to Grenade) The original laboratories were placed very near of the Residencia de Estudiantes, in the CSIC of Serrano. At the time, the main contacts with abroad were with Italy (Amaldi), Switzerland (Zurich,Paul Scherrer), Germany (Max Planck-Institut fur Physik ,Gotinga), Strasbourg (Pierre Weiss) and Chicago (Fermi)

- **The present site of CIEMAT** was founded as JEN (Junta de Energia Nuclear) in 1951 and the previous contacts were reinforced (France,CEA, Yves Rocard, Francis Perrin)

  Objetives of the JEN, that had joined the EURATOM, were the extraction and treatment of radiative minerals, production of isotopes, survey of radiative installations, counselling, construction of small reactors for Latin America , formation of technical staff for industry,etc.

  Two experimental reactors of ”swimming pool” shield (JEN I and JEN II) and an experimental reactor of rapid neutrons (CORAL) were used until the 80’s. At this time, the responsability on the survey of nuclear reactors was shifted to an independent organism, the ”Consejo Nuclear” that at present has the old competencies of the JEN in matters of legal counsel and survey.

- **In 1964** the ”Instituto de Estudios Nucleares”, directed by Armando Duran, was created. It was the source of the real financing of one HEP group in the JEN and the development of a previous existing one in the University of Valencia.
- **In 1986** there was the shift of name from JEN to CIEMAT, indicating the shift from Nuclear Energy to wider interests (Fusion, solar, eolic, energies, energies from biological origin, etc.)

  About 500 people undergraduate or with doctor degree work in R+D (scientific or technical occupations) from the 1300 total number of employees in CIEMAT.
- **The human resources** are shared in the following activities :
- Nuclear fission : 12 %
- Fossil fuels : 6 %
- Fusion and HEP : 12 %
- Energies from solar,eolic and biological origin : 12 %
- Environment impact : 15 %
- Other : 43 %

About the High Energy Physics, and Astrophysics units.

- **The HEP group in CIEMAT started** ,de facto, beginning of 60's (Salome de Unamuno, Bruno Escoubes, with techniques of bubble chamber)
- **In 1961** ,Spain joined CERN as a member country.
- **In 1965** there was a "master" on HEP organized in the JEN. It was attended by Manuel Aguilar, Antonio Ferrando, Juan Antonio Rubio, Alvaro de Rujula, etc., at the time, undergraduates on Physics from the Madrid University. Many of the participants played later a crucial part on the HEP development in Spain.
- **In 1967** started the first actually equipped team, always with bubble chamber techniques and dedicated to the study of barion and meson spectrocopy. (Heavy liquid Bubble Chamber of CERN, 2m. CERN BC, 50 cm. BC using the PS)
- **In 1969** Spain abandonned CERN for financial reasons and it would only re-enter in the 82. The refused candidature of Spain to build the SPS in "El Escorial" was in the background of such decision but the story was much more involved.

- **During the 13 years** in between the JEN HEP group of CIEMAT collaborated with CERN in some BC experiments, (low energy antiproton-proton, K-proton, and started to build modern instruments of measure ,ERASME (Electron Ray Scanning and Measurement Equipment), detection (25 cubic m. Forwad Cerenkov for the European Hybrid Spectrometer in CERN, etc,.) and started to use electronics detection techniques.

  The physics of charm detection with Rapid Cycling Bubble Chamber was a novelty in the 80's., followed by pure electronic detection.

- **In 1981** ,Juan Antonio Rubio started the contacts with Ting in DESY, Hambourg,in the MARK-J experiment where he sent several graduates and undergraduates, in order to prepare the participation to L3.

  The people formed with Ting (J. Salicio, J. Berdugo, C. Mana etc.,) went then to CERN to join L3.

- **In 1984-86** there was a participation in UA1 (A. Ferrando et al.) that was continued by the preparation of the LHC with different technical proposals for calorimetry.

- **From 1985-94** , there was a participation on the Heavy ions experiments NA36, WA85, WA94, using O^{16}, S^{32} beams from CERN SPS. (P. Ladron de Guevara et al.)

- **The L3** Z chambers and octants were built in Madrid and L3 was the main collaboration from 1984 to 2000 (J. A. Rubio, M. Aguilar et al.), to be slowly replaced by AMS (differential Cerenkov, Javier Berdugo et al.) and CMS (part of the octant mu-chambers, Marcos Cerrada et al.) that are the main present activities of the Particle Physics and Astophysical particle physics units.