



José Alberto Lobo Gutiérrez (1953-2012): A brief scientific biography

José Alberto Lobo Gutiérrez obtained his degree in physics at the University of Barcelona (UB) in 1975. Later he received his PhD from the same university in 1980 doing research under the supervision of Prof. Joaquim Gomis, writing a thesis in “Dynamics of Relativistic Particles”.

He worked at the UB for about 25 years where he taught a variety of topics, many of them theoretical, like mathematical methods of physics or General Relativity, but also experimental. In particular he contributed to set up from scratch a laboratory for quantum physics experiments. He also taught at the graduate school level, where he liked to teach data analysis techniques and in particular methods for digital signal analysis. Obviously, he also enjoyed teaching gravitational wave physics. During all the time at the UB he had the opportunity to interact with many students. His very personal way of teaching has left an imprint on most of his students, who like to remember these experiences. It was always difficult to walk with him across the UB campus near the Diagonal avenue in Barcelona as many people stopped him to remember with gratitude the times when they were his students.

As PhD advisor he supervised a number of PhD students that worked in the area of gravitational wave astronomy: José Antonio Ortega Ruiz (1997), Miquel Montero Torralbo (1998), M. Angeles Serrano Moral (1999), Miquel Nofrarias Serra (2007), Josep Sanjuán Muñoz (2009), Marc Díaz Aguiló (2011), Ignacio Mateos Martín, and Ferran Gibert Gutiérrez.

His research path started in the area of theoretical physics. However, his research interests evolved towards the area of gravitational physics and of gravitational wave astronomy, where he has been a pioneer of the field in Spain. His contributions to this field cover a wide range of topics. On the theoretical front he did some studies on the generation and propagation of gravitational waves. He investigated (with A. Krolak and B.J. Meers) the optimization of laser interferometers for the detection of gravitational waves from coalescing binaries and participated in early studies of the estimation of the parameters of the gravitational wave signal of such systems.

Then, he worked (with M. Montero) on the design and development of various filtering strategies for the analysis of data generated by a resonant bar gravitational wave antenna. He also studied (with P. Astone and B.F. Schutz) strategies to perform coincidence experiments between interferometric and resonant bar detectors. Later, he actively participated in the design and study of future spherical resonant detectors and other such detectors with similar topologies. In particular he studied in great detail the role of resonant transducers.

From 2004 he got involved in the endeavor of designing and building a space-based gravitational-wave detector, the Laser Interferometer Space Antenna (LISA). To that end he

formed a new group from scratch at the Institut de Ciències de l'Espai (ICE; CSIC-IEEC). With this group he led the Spanish contribution to the LISA PathFinder mission and also research towards a future LISA mission. In 2005 he moved to the ICE as a CSIC Research Professor, where he remained.

During these years, the ICE group has contributed the Data and Diagnostic Subsystem of the LISA Technology Package (LTP), the payload of LISA PathFinder. This consists of highly stable temperature sensors, magnetometers and a particle counter to monitor the experiment environment, plus heaters and magnetic coils. These instruments will monitor and characterize the experiment during flight operations. In addition, the Data Management Unit will act as the computer of the LTP experiment, processing the measurements and controlling different subsystems. This hardware package, together with the flight software, has been delivered for its final integration in the satellite.

Alberto Lobo was also a member of the LISA International Science Team and of the Science Team for eLISA/NGO. His leadership and human qualities have been fundamental for the success of the enterprise he initiated at the ICE. Probably, one of his biggest achievements has been to transmit his passion and his joy for science to everybody around him, and to prepare a generation of scientists that will continue the efforts that he pioneered.

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