

Antonio Castellanos Mata

Antonio Castellanos Mata was born on March 7, 1947, near León, Spain. He was the third and youngest child of Manuel Castellanos Berjón (1910–1993), a school teacher, and Fidela Mata Sarmiento (1915–2013). A love for reading and admiration for science were always part of family life. In his childhood and adolescence Antonio studied in a seminary but was expelled from there. He decided to become a scientist and entered the University of Valladolid, where in 1972 he defended his PhD thesis. He worked at many universities: Universidad de Valladolid, Universidad del País Vasco, Universidad Autónoma de Madrid; since 1983, he was a full professor at the University of Seville. Antonio made long-term scientific visits to the USA, France, Nicaragua, and Russia, collaborated with researchers from the UK, Netherlands, China, Algeria. He worked in various fields of science: electrohydrodynamics, gas discharges at atmospheric pressure, cohesive granular materials.



Antonio founded a scientific school at the University of Seville. His research group of Electrohydrodynamics and Cohesive Granular Media included more than 20 researchers. Many of his former students are now full professors and continue the scientific tradition. He always treated his students as equals, with deep respect, discussed scientific problems with them, gave them freedom, and cared about their progress in science more than about anything else. He lectured physics at various universities during all his career. For the last 33 years, he taught electrodynamics and electromagnetism at the Faculty of Physics of the University of Seville, a task which he performed with enthusiasm and passion. Antonio directed research projects for more than 30 years, and this made it possible for him to organize two laboratories at the University. He always had bright ideas, scientific intuition, and creative mind. Dedicating a lot of efforts to pure science, Antonio was also interested in practical problems and collaborated with industry (Xerox Corporation, Novartis, Dow Corning, International Fine Particles Research Institute). Antonio signed only those papers to which he indeed contributed, but nevertheless authored more than 350 papers, with more than 7800 citations, though he never gave importance to the indices of scientific impact. He believed that only important contributions matter.

Antonio belonged to a generation that played an important role in the revival of physics in Spain. In 2013, he was awarded the Prize FAMA for the research career by the University of Seville.

Among his scientific results, we can mention the following:

- Galilean limits of electromagnetism.
- Temperature equation and entropy production in electrohydrodynamics.
- Seminal works on numerical simulation of electrohydrodynamic flows.
- Physical mechanism of electrothermohydrodynamic instabilities.
- Energy cascade in electrohydrodynamic turbulence.
- Stabilization of dielectric liquid bridges by ac electric fields.
- Absence of collisional regimes in fine powders for negligible interstitial gas interaction.
- Automated apparatus to characterize fine powders (Sevilla Powder Tester).
- Apparatus to characterise the cohesive properties of grains (Triana Powder Tester).
- Model of elastoplastic contact between two powder particles.
- Microstructure characterization of fluidized bed of fine particles: aggregation, solidlike-fluidlike transition, fluctuations, influence of electromagnetic fields.
- Experimental setup for measuring acoustic properties of fine (including magnetic) powders.

In his last years, Antonio worked on thermodynamics in relativity (but he did not have time to complete this work) and on triboelectricity in fine powders (not published due to contract restrictions). His work on wave propagation in powders at low pressure, as well as other research lines initiated by him, will be continued by his colleagues. As a researcher, Antonio combined a strong theoretical mind, experimental intuition, profound understanding of physics of phenomena, and passionate love for science.

In 1997 Antonio Castellanos visited St. Petersburg and IPME RAS for the first time. In 1998 he attended the conference “Advanced Problems in Mechanics” (at the time “Nonlinear Oscillations in Mechanical Systems”). Then he became a permanent member of scientific committee of APM and came to the conference many times. Actually, he was its first regular foreign participant. We had the pleasure to discuss with him scientific matters at a profound level and just enjoy his company, his nice sense of humour and open, sincere nature. Antonio helped to convert APM to a true international conference, he invited many foreign participants. Several times Antonio organized a minisymposium on powders and grains in the frame of APM, which attracted a lot of prominent scientists and young researchers. Antonio established long-lasting collaboration with scientists from Russia, many of them (P.A. Zhilin, N.A. Morozov, I.G. Goryacheva, A.M. Krivtsov, S.N. Gavrilov, E.F. Grekova) were invited to visit the University of Seville. They enjoyed his brilliant hospitality and the outstanding research atmosphere of his scientific school.

In 2014 Antonio was incidentally diagnosed with kidney cancer at an early stage, but of a rare and aggressive type. In 2015, it gave metastases, despite their very low probability, and after a year of fighting the disease, Antonio died on January 27, 2016. To his very last days, Antonio worked, gave classes, continued his research, and directed scientific projects. He kept his enchanting smile, his interest and love for science, generosity, care for people around him, fortitude and courage, for which he was admired and loved by his colleagues, friends, and family. We will deeply miss him.

Chairmen of APM 2016
Professor, Corresponding member of the Russian Academy of Sciences D.A. Indeitsev
Professor A.M. Krivtsov

**Minisymposium in memoriam of Antonio Castellanos Mata will be held in the frame of the
Advanced Problems in Mechanics 2017 Summer School-Conference**
(June 25 - July 01, 2017, St. Petersburg, Russia).

<http://www.pdmi.ras.ru/~elgreco/Antonio/ms/ms-Antonio-Castellanos.html>

Contact person: Elena Grekova, elgreco@pdmi.ras.ru. If you are interested in the event please send her an e-mail.

Topics: electrohydrodynamics (Antonio Ramos, ramos@us.es), gas discharges (Francisco Pontiga, pontiga@us.es), granular materials (Elena Grekova, elgreco@pdmi.ras.ru)

Granular session will be held at the beginning of the conference to avoid overlapping with Powders and Grains 2017.

We will be grateful if you distribute this information among your colleagues.