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Leon B. Lucy, 1938–2018

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In March this year, Leon Lucy passed away unexpectedly. Leon was one of the most highly respected stellar astrophysicists of his generation. He was a student of Franz Kahn at the University of Manchester, where he received his doctoral degree in 1962. After postdoctoral positions at Princeton, Goddard Institute for Space Studies in New York and the Max Planck Institute for Physics and Astrophysics in Munich, he spent 20 years (from 1965 to 1986) at the Department of Astronomy at Columbia University, where he served as chair from 1979 to 1982. For a decade at Columbia, he was co-editor of the Astronomical Journal, initially alongside Lodewijk Woltjer, and later with Norman Baker. From 1998, Leon was a visiting professor at Imperial College London.

Leon started his career at a time when computers became capable of simulating complex physical processes. He realised early their power as tools to develop physical understanding beyond analytical techniques. His scientific vision and mathematical skills resulted in creativity in three different areas, namely: the invention of smoothed-particle dynamics; a method to combine radiative transfer calculations in expanding atmospheres using Monte Carlo methods; and the independent development of an iterative restoration technique, which is known as the Richardson-Lucy deconvolution algorithm. These three methods are still very broadly and successfully used in many scientific areas, and beyond. Leon continued to develop and apply these three methods in a large variety of contexts. Later, he also worked on algorithms to infer the validity of Bayesian models. Leon's, mostly first-author, papers set the standard for the combination of elegance and clarity.

In 1976, Leon visited ESO, which was in Geneva at that time, for half a year, and he worked at ESO in Garching from 1984 to 1998 — initially in the Science Division and from 1991 in the Space Telescope-European Coordinating Facility (ST-ECF). Three important events occurred during the time of Leon's stay at ESO, though in none of them was Leon's participation initially foreseen. His emphatic offers to engage in providing support on these occasions demonstrated Leon's strong motivation to accept responsibility when he saw the possibility to make a significant contribution, which he impressively achieved in all three cases.

The first opportunity arose completely unpredictably in 1987 with the supernova explosion SN 1987A in the Large Magellanic Cloud. The brightest naked eye supernova since the 17th century, this event meant that scientific analysis methods for observations of unprecedented detail had to be developed largely from scratch. Leon wrote two computer codes to model the spectra of the early photospheric and the subsequent nebular phases. The first results were presented as early as the summer of 1987. In August 1988, a subtle change was observed in the optical emission lines of SN1987A. Leon realised that this effect was due to obscuration by dust, which was the earliest recognition of the formation of dust in any supernova. A quantitative model provided many characteristics of the dust including its mass and type. It was supplemented by concurrent infrared observations from ESO. This methodology of using optical spectra as a diagnostic of dust formation has stood the test of time and has not been surpassed.

In 1989, the New Technology Telescope (NTT) at La Silla saw first light. The intrinsic optical quality of the NTT and the behaviour of the atmosphere were so excellent that the images of stars looked very pixellated when viewed at full resolution with the imagers available at the time. This was not only aesthetically unsatisfactory, but also scientifically detrimental, and it inspired Leon to enhance his deconvolution algorithm developed in 1974 to decrease the size of the output pixels so that the processed images would be sharper and look much smoother.

Only one year later, shortly after the launch of the Hubble Space Telescope (HST), it was discovered that the curvatures of the primary and secondary mirrors of the HST did not match. As a result, HST images of stars had a sharp core but very extended halos. Until the problem was fixed in 1993 by astronauts

who installed some corrective optics, advanced versions of Leon's method were eagerly employed to make the best possible use of the early HST images. While at the ST-ECF, Leon continued to develop and refine these restoration techniques, applying them to both imaging and spectroscopic data.

Leon laid the foundations for the explanation, through radiation pressure and multiple scattering, of the flat-bottomed absorption troughs in the stellar-wind spectral lines of hot massive stars when these mass-loss indicators were discovered with the Copernicus satellite. His explanation of shocks producing X-rays from the same stars solved the riddle of the co-existence of hot and cool gas. A topic that excited Leon from the beginning to the end of his career was the mutual effects exerted by the components of close and common-envelope binaries. A strong focus of his was the reliability with which system parameters can be extracted from the observations, including astrometry by Gaia. Curiosity to understand how to best interpret observational data was a thread running through Leon's scientific life. In the year 2000, the Royal Astronomical Society honoured him with the Society's Gold Medal for Astronomy.

While in Garching, Leon attended almost every astrophysics seminar, regardless of the topic. His outstanding broad knowledge and deep understanding of physics became impressively clear in his contributions to discussions, in which he engaged nearly without exception. He enriched the scientific life of the entire local astronomy community, and he generously shared his vast font of expertise with everyone requesting it. He could deliver incisive critique but wrapped in his inimitable sense of humour.

If a single word could ever adequately describe a person, in Leon's case it would be unpretentiousness. Leon is survived by his wife, Ren Wen Wan, and their daughter.

Personnel Movements

Arrivals (1 July–30 September 2018)

Europe

Araujo Hauck, Constanza (CL)	Optical Engineer
Beneš, Nicolas (DE)	Software Engineer
Bergamo, Kevin (IT)	IT Specialist-Network
Bittner, Adrian (DE)	Student IMPRS
Cosentino, Giuliana (IT)	Student
Facchini, Stefano (IT)	Fellow
Fahrion, Katja (DE)	Student
Rubin, Adam (IL)	Fellow
Sqalli Houssini, Omar (AT)	Project Manager

Chile

Flores, Rumy Boris (CL)	Facilities Management Supervisor
Gil, Juan Pablo (CL)	Software Engineer
Olivares, Juan Carlos (CL)	Telescope Instruments Operator
Ribas, Alvaro (ES)	Fellow
Ritter, Florian (CL)	Procurement Officer

Departures (1 July–30 September 2018)

Europe

Agnello, Adriano (IT)	Fellow
Augustin, Ramona (DE)	Student
Cikota, Aleksandar (HR)	Student
Hashiba, Natsuki (JP)	Student
Hook, Richard (UK)	Public Information Officer
Janssen, Edmund (NL)	Graphic Designer
Stroe, Andra (RO)	Fellow
Surot Madrid, Francisco (CL)	Student
Vera Sequeiros, Ignacio (ES)	Software Engineer
Warmels, Rein (NL)	Astronomer (Web Publication Manager)
Yen, Hsi-Wei (TW)	Fellow

Chile

Asmus, Daniel (DE)	Fellow
Bolmer, Jan (DE)	Student
Guerra, Juan Carlos (ES)	Instrumentation Engineer
Leftley, James (UK)	Student
Meilland, Anthony (FR)	User Support Astronomer