

electrostatic energy analysis



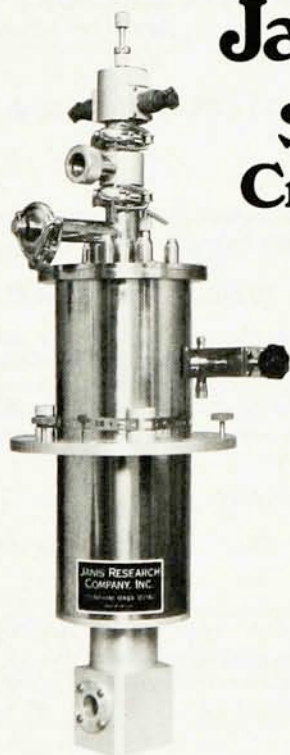
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agreement with modern values. Combined with his results on stellar interiors, his research on the solar atmosphere led to the important result that the composition of the Sun is nearly the same at the surface as in the deep interior.

In interstellar studies, one of his best known results concerned the structure of the ionized hydrogen regions surrounding a star of high surface temperature (spectral type O or B). He showed in 1939 that the ultraviolet photons from such a star maintain almost complete ionization of the hydrogen atoms within most of this zone. Outside a narrow transition region where the ultraviolet radiation is fully absorbed, the hydrogen atoms are almost entirely neutral. The luminous regions of ionized hydrogen, which are spherical if the gas density is reasonably uniform, are seen in other galaxies as well as in our own, and are now often referred to as Strömgren spheres.

During his later years Strömgren devoted much effort to photoelectric stellar photometry. Some of the wavelength bands he selected for this program were sufficiently narrow that one could measure the strength of certain absorption lines without detailed spectra. Among the important goals of this program were the systematic determination of chemical composition and age for individual stars and the measurement of color excesses for stars of spectral type F. The lower-mass F-type stars are generally more common than are the B-type stars for which color excesses are usually measured, and thus provide more detailed information on the distribution of absorbing dust particles. The work that Strömgren and several collaborators carried out has basic importance for many statistical studies of the Galaxy and has greatly increased our astronomical knowledge.

In recognition of his distinguished contributions to astronomy Strömgren received numerous awards and was chosen as president of the American Astronomical Society (1966-67) and the International Astronomical Union (1970-73). Astronomers will remember him with great affection as well as with enormous respect.

LYMAN SPITZER JR
Princeton University
Princeton, New Jersey

Joseph T. Massimo

Joseph Thomas Massimo, professor of physics at Brown University, died on 20 May 1987 at his home in Providence.

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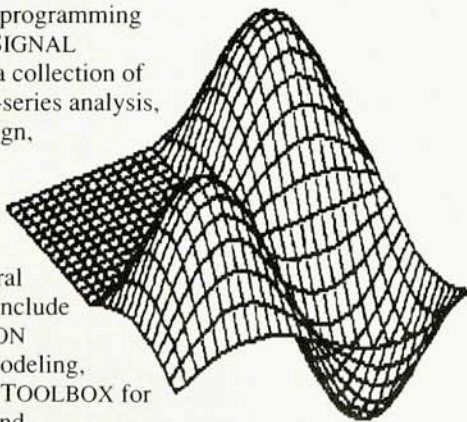
The popular PRO-MATLAB and application specific TOOLBOXES are now available on a wider variety of computers! PRO-MATLAB, called PC-MATLAB on personal computers, is the premier interactive program for numerical linear algebra and matrix computation. With its unique matrix interpreter, complex arithmetic, signal processing algorithms, easy extendibility, and mathematical orientation, MATLAB has rapidly become the software system of choice for high-powered scientific research.

MATRIX COMPUTATION

MATLAB provides easy access to matrix software from LINPACK and EISPACK including linear algebra functions like eigenvalues, linear-equation solution, least-squares, inverse, pseudoinverse, matrix exponential, singular value decomposition, and almost anything else you can think of to do with matrices. MATLAB is also chock full of other analytical capabilities including complex and polynomial arithmetic, curve fitting, cubic splines, nonlinear optimization, quadrature, ordinary differential equations, and multivariate statistics. Altogether, there are over 200 functions available.

TIME-SERIES ANALYSIS

Optional *Toolboxes* extend MATLAB, providing additional application-specific capabilities. It is a testimonial to the power of MATLAB that Toolboxes are written entirely in MATLAB itself - with no Fortran or other "low-level" programming required. For example, the SIGNAL PROCESSING TOOLBOX is a collection of MATLAB functions for time-series analysis, including filtering, filter design, resampling (decimation and interpolation), convolution, correlation, 2-D operations, and power spectrum estimation (FFT-based spectral analysis). Other Toolboxes include the SYSTEM IDENTIFICATION TOOLBOX, for parametric modeling, and the CONTROL SYSTEM TOOLBOX for control system engineering and state-space modeling.



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FAST, ACCURATE AND RELIABLE

MATLAB not only solves mathematics and physics problems - it does it *fast*. The carefully optimized code fully utilizes any available floating point hardware for maximum performance. For example, on a PC it takes less than 1 second to multiply 20 x 20 matrices and 2.3 seconds to invert them. A 1024 point FFT finishes in 2.4 seconds! On larger machines, the efficient C and assembly language code is even more remarkable. You won't have to question the results either - the numerical algorithms have been programmed by leading experts in mathematical software.

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OPEN SYSTEM

Many of MATLAB's features are implemented in programmable *M-files*, made possible because of MATLAB's open-system philosophy. Since MATLAB is the teaching and research system chosen by Physics, Computer Science and Mathematics departments at most leading universities, you can look forward to an exciting future of new algorithmic developments from leading experts in mathematical and signal processing software.

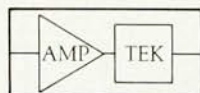
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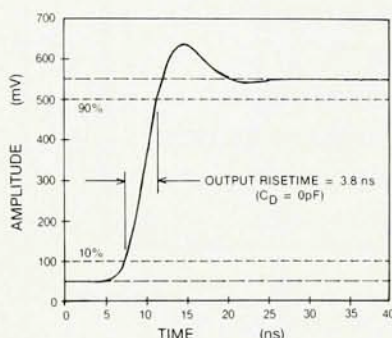
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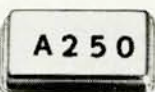
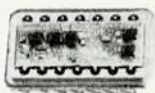
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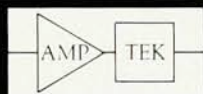
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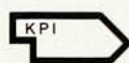


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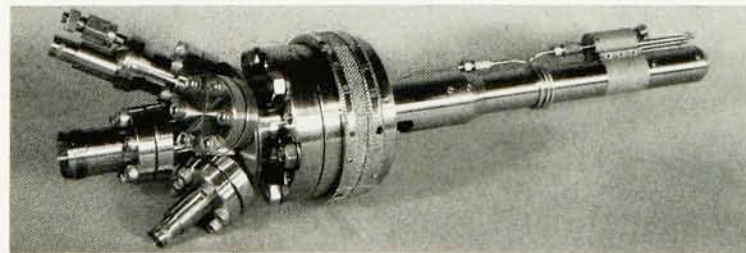
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Born in Queens, New York, in 1930, he received his undergraduate education at Hofstra University and carried out his graduate work at Brown University, from which he received his PhD in physics in 1964.

After a period as a National Science Foundation Postdoctoral Fellow at the Istituto Nazionale di Fisica Nucleare (Padua, Italy), he returned to Brown as an assistant professor in the department of physics.

He was an energetic and creative teacher and experimentalist. Always an enthusiastic gadgeteer, but a stickler for simplicity and elegance, he conceived, developed and brought to fruition a host of teaching laboratory experiments. In the laboratory, in the classroom or as an academic counselor, he was a valued and loved teacher.

His contributions to the field of elementary-particle physics centered on computer applications. He was instrumental in creating data analysis systems for use with bubble chambers and spark chambers. Later he participated in developing one of the first general-purpose, on-line computer control systems for large-scale counter and wire chamber experiments at the Fermi National Accelerator Laboratory. His passion for sophisticated statistical techniques applied to analysis of elementary-particle data was a constant source of delight to him and a priceless asset to his colleagues. Additionally, for many years he served on university committees providing advice on the creation and operation of computing facilities and centers providing services to the community.

During much of the period described above, he was afflicted with a series of debilitating illnesses accompanied by pain; these he treated with stoic grace and carried on a full program.

The recollections of his courage in the face of suffering, his devotion to his profession, his wry sense of humor and wit with his students and colleagues will serve as examples to all of us who knew him.

ROBERT E. LANOU JR
Brown University
Providence, Rhode Island

G. Donald Long

G. Donald Long died 24 August 1987 from cancer. He was 57 years old.

Long received his BS in engineering physics from Lehigh University in 1951 and his PhD from the University of Pennsylvania in 1956. He spent his entire professional career as a scien-