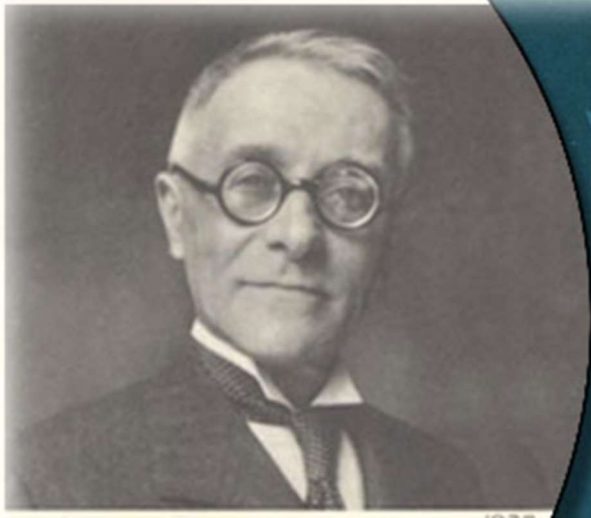


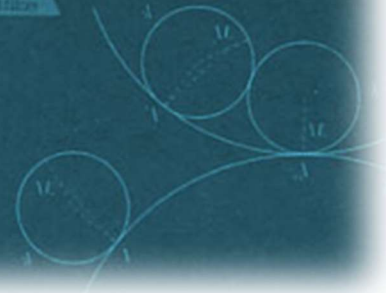
UNIVERSITÀ DEGLI STUDI DELL'AQUILA
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International Research Center for the
MATHEMATICS AND MECHANICS OF COMPLEX SYSTEMS



Tullio Levi-Civita



TULLIO LEVI CIVITA
INTERNATIONAL PRIZE 2023

LAUDATIO FOR PROF.
TAI-PING LIU

MEMOCS CENTER
MAY 2023

M&MOCS CENTER, MAY 2023



Tai-Ping Liu is currently Emeritus Professor of Mathematics at Stanford University (U.S.).

Since 2000 he's Distinguished Researcher at Academia Sinca, in Taiwan.

He's Fellow of Society for Industrial and Applied Mathematics (SIAM, named in 2013), and Fellow of American Mathematical Society

(named in 2012).

He first studied Mathematics at National Taiwan University, where he graduated in 1968, then completed his specialization at Oregon State University (U.S.); he subsequently received his PhD from the University of Michigan in 1973.

His professional career initially developed at the University of Maryland, where he was Assistant Professor from 1973 to 1978, Associate professor from 1978 to 1981, Professor from 1981 to 1988. From 1988 to 1990 he was Professor at New York University; since 1990 he was Professor at Stanford University, before being appointed Emeritus in 2008.

His research activity centers on nonlinear partial differential equations in fluid dynamics and the kinetic theory of gases. In the field of shock wave theory, he constructed a deterministic version of the Glimm scheme, proposed proper admissibility conditions that now bear his name, pointed out important properties of nozzle flows, initiated the mathematical theory of relaxation of hyperbolic systems and discovered a nonlinear functional for studying the theory of well-posed hyperbolic conservation laws. Using innovative ideas on nonlinear wave superposition, he investigated the nonlinear stability of viscous shock profiles.

He introduced the Green's function approach to the study of the Boltzmann equation in the kinetic theory; together with Shih-Hsien Yu, he explicitly constructed Green's function for the Boltzmann equation and used it to study the coupling of singular waves and other key issues relating the kinetic theory and the fluid dynamics.

Alongside the activity of "pure" research, equally important is his commitment to scientific dissemination and dialogue between mathematics and applied sciences.

The excellent results obtained throughout his entire career are collected in over 150 disciplinary publications in reviewed journals and proceedings.

Extremely relevant is also his editorial activity; he's editor or author in some of the main scientific periodicals all over the world. Among the others:

- Archive for Rational Mechanics and Analysis (edited by Springer);
- Mathematical Models and Methods in Applied Sciences (edited by Springer);
- Journal of Dynamics and Differential Equation (Springer ed.);
- Chinese Journal of Partial Differential Equation (periodical founded by Peking University, edited by Global Science Press)
- Discrete and Continuous Dynamical Systems (published by American Institute of Mathematical Sciences);

- Taiwanese Journal of Mathematics (published by Mathematical Society of the Republic of China);
- Bulletin, Institute of Mathematics (published by Academia Sinica);
- Acta Mathematicae Applicatae (Editor in chief, edited by Springer);
- Acta Mathematica Scientia (Springer ed.);
- Zeitschrift für Analysis und ihre Anwendungen (published by University of Leipzig);

For the international impact of all his activity, for the huge value of his research for the entire Scientific Community, for his focus to concrete application of gained results the Scientific Committee of the Levi-Civita Prize in Mechanical and Mathematical Sciences is honored to propose Tai-Ping Liu as the Recipient of the 2023 Prize Edition.