



## Prof. Jacques-Louis Lions

Former President, Academy of Sciences and Professor of Mechanical Sciences, Collège de France and Ecole Polytechnique, Paris, France



### **Most important awards, prizes and academies**

Academy of Sciences of Paris (1973); Royal Society of Sciences, Liège (1973); Accademia delle Scienze e Lettere, Milano (1977); Academia Brasileira de Ciencia (1979); USSR Academy of Sciences (1982); Royal Academy of Belgium (1986); American Academy of Arts and Sciences (1986); International Academy of Astronautics (1986); Founding Member of the Academia Europaea (1988); Member of the Pontifical Academy of Sciences (1990); Member of the Ukrainian Academy of Sciences (1991); Member of Russian Academy of Sciences (1992); Member of the Chilean Academy of Sciences (1993); Member of the Argentinian Academy of Sciences (1994); Member of the Royal Society (1996); Member of the National Academy of Sciences USA (1996); Member of TWAS (Third World Academy of Sciences) (1996); Member of FORUM France-Japan (1996); Fellow of Tata Institute of Fundamental Research, Bombay (1996); Royal Academy of Sciences of Spain (1997); Portugal Academy of Sciences (1997); Foreign Member of KAST (Korean Academy of Sciences and Technology) (1997); Foreign Member of Academy of Sciences of China (1998); Member of Lincei Academy (1998). John von Neumann Prize (1986); Japan Prize (1991); Harvey Prize (1991); Reid Prize, SIAM (1998).

## Summary of scientific research

Linear and non linear partial differential equations; interpolation of function spaces; control of distributed systems; analysis of models in climatology; numerical analysis of partial differential equations; parallelism – decomposition methods.

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## Main publications

*Published Books*: More than twenty books, translated into English, Russian, Chinese and sometimes into Japanese: *Equations différentielles opérationnelles et Problèmes aux limites*, Springer-Verlag (1961); *Quasi-Réversibilité* (avec R. Lattes), Dunod (1967); *Problèmes aux limites non homogènes et Applications* (avec E. Magenes), 3 vol., Dunod, Paris (1968); *Sur le Contrôle optimal de systèmes gouvernés par des équations aux dérivées partielles*, Dunod (1968); *Quelques méthodes de résolution des problèmes aux limites non linéaires*, Dunod (1969); *Les inéquations en Mécanique et en Physique* (avec G. Duvaut), Dunod (1972); *Analyse numérique des inéquations variationnelles* (avec R. Glowinski et R. Tremolieres), 2 vol., Dunod-Bordas, Paris 1976); *Perturbations singulières dans les problèmes aux limites et en Contrôle optimal*, Springer Verlag, NY (1973); *Sur quelques questions d'Analyse, de Mécanique et de Contrôle optimal*, Presses de l'Uni. de Montréal (1976); *Applications des inéquations variationnelles en Contrôle stochastique* (avec A. Bensoussan), Dunod-Bordas, Paris (1978); *Asymptotic Analysis for Periodic Structures* (avec A. Bensoussan et G. Papanicolaou), North-Holland, Amsterdam (1978); *Some Methods in the Mathematical Analysis of Systems and their Control*, Science Press, Beijing (China) et Gordon & Breach Science Publishers Inc., New York (1981); *Contrôle impulsif et inéquations variationnelles* (avec A. Bensoussan), Dunod-Bordas, Collection M.M.I., Paris (1982); *Contrôle des systèmes distribués singuliers*, Gauthier Villars, Collection M.M.I., vol. 13, Paris (1983); *Analyse mathématique et calcul numérique pour les Sciences et les Techniques* (avec R. Dautray), en 3 vol., Masson, Paris (1984-1985). Réédition en 9 volumes, Masson, Paris (1988); *Modelling, Analysis and Control of Thin Plates* (with J.E. Lagnese), Masson, Paris (1988); *Contrôlabilité exacte, Perturbations et Stabilisation de Systèmes Distribués*, Masson, Paris, Collection R.M.A. (1988), Perturbations, vol. R.M.A. 9 (1988); “*El Planeta Tierra*”, *El Papel de las Matematicas y de los Super Ordenadore*. Traduction: I. Diaz et M. Artola Mendez, Publication: Instituto de España, Espasa Calpe S.A., Madrid, 8 (1990); *Sentinelles pour les systèmes distribués à données incomplètes*. Masson, Paris (1992); *Models for the coupled atmosphere and ocean* (with R. Teman and S. Wang), Computational Mechanics Advances, Ed. North Holland, vol. 1 n° 1 (1993); *Sur le contrôle parallèle des systèmes distribués* (with O. Pironneau), CRAS, Paris, t. 327, Série 1, 993-998 (1998) (dédié à la mémoire de Jean Leray); *Algorithmes parallèles pour la solution de problèmes aux limites* (with O. Pironneau), (dédié à la mémoire de Jean Leray), C.R.A.S. 327, 947-952 (1998); *Parallel decomposition of control problems for Navier-stokes equations* (with O. Pironneau) (dedicated to A. Chorin), Berkeley (1998); *Approximation of elliptic problems by decomposition methods* (with O. Pironneau). To appear (1998); *Decomposition methods and Lagrange multipliers* (with O.

Pironneau) (1998); *Domain decomposition methods for CAD* (avec O. Pironneau), C.R.A.S., t. 328, Série I, 73-80 (1999); *Decomposition of energy, spaces and applications* (with A. Glowinski and O. Pironneau), C.R.A.S., Paris (1999), to appear.