

CURRICULUM VITÆ

Albert TARANTOLA

*Institut de Physique du Globe de Paris
Université de Paris 6*

4, place Jussieu; 75005 Paris; France

Telephone: (33) (1) 48 04 73 91; Electronic mail: tarantola@ipgp.jussieu.fr

Born: June 15, 1949, Barcelona, Spain.

Nationality: Spanish and Italian

University Degrees: *Docteur de Spécialité*, Université de Paris 6, December 1976.
Docteur d'État, Université de Paris 6, June 1981.
Doctor Honoris Causa, University of Copenhagen, Nov. 2004.

Research activity:

My work on the fundamentals of Inverse Theory, lead to the publication of two papers in 1982 (*J. Geophys.* and *Rev. Geophys. and Space Phys.*) and to the publication of a book (*Inverse Problem Theory and Methods for Model Parameter Estimation*, A. Tarantola, SIAM, 2005), which are now well known. A citation analysis conducted by the Society of Exploration Geophysicists showed that one of my papers describing a methodology for interpretation of waveform data, published in 1984, was the most cited of all papers published by *Geophysics* that year. I have recently turned to more fundamental questions. After making some work on theoretical physics —that has resulted in the publication of a book (*Elements for Physics; Quantities, Qualities, and Intrinsic Theories*, A. Tarantola, Springer, 2006)— I am now doing some fundamental work on Probability Theory (*Image and Reciprocal Image of a Measure; Compatibility Theorem*, A. Tarantola, arXiv:0810.4749).

Teaching:

Every year since 1978 I give a course in the University of Paris and one invited course abroad. The last courses were at Stanford University (2004), Beijing University (2005), Bangalore (2006), California Institute of Technology [Caltech], (2007), and Stanford University (2008).

Director of the 50-th session of the Les Houches Summer School on Theoretical Physics (NATO Advanced Study Institute).

Director of graduate studies at the Institut de Physique du Globe de Paris (responsable du D.E.A. de Gophysique Interne) (1991-1996).

Other Activities:

- Jan. 1987–Dec. 1992: Chairman, *Committee on Mathematical Geophysics*, International Union of Geodesy and Geophysics.
- Jan. 1990–Dec. 1992: Editor, *Journal of Geophysical Research*, American Geophysical Union.
- June 1991–June 1996: Director of Graduate Studies at the Institut de Physique du Globe de Paris (responsable du D.E.A. de Gophysique Interne).
- Jan. 1993–Dec. 1993: Member of the Editorial Board, *Inverse Problems*, Institute of Physics.
- Jan. 1994–June 1996: Chairman of the Department of Geophysical Observatories (including Volcanic, Magnetic and Seismic Observatories).
- Jan. 1995–: Member of the Editorial Board, *Journal of Volcanology*.

Publications and Communications:

- Two books published, editor of one book, two books in preparation, chapters in ten books.
- Eighty papers in refereed journals.
- Over 100 communications in international scientific meetings (50 invited).

Citations:

- My book *Inverse Problem Theory* (two different editions) has already been cited 2000 times in the literature.
- Papers:
 - Generalized Nonlinear Inverse...* (Rev. Geophys. Space Phys., 1982), cited more than 450 times.
 - Inverse problems = Quest for information* (J. Geophys., 1982), cited more than 250 times.
 - Inversion of seismic reflection data...* (Geophysics, 1984), cited around 200 times.
 - Monte Carlo sampling...* (with K. Mosegaard) (J. Geophys. Res., 1995), cited 150 times.
 - A strategy for nonlinear elastic...* (Geophysics, 1986), cited more than 100 times.
- 140 citations in the *Science Citation Index* in 1991 (following years not checked).

Honors and Awards:

- Prize “Antoine d’Abbadie” of the French Academy of Sciences.
- Award “Conrad Schlumberger” of the European Association of Exploration Geophysics.
- Elected “fellow” of the American Geophysical Union.
- Silver Medal of the C.N.R.S. (French National Science Foundation).

Employment:

1979–1981:	Assistant, Université de Paris 6.
1981–1983:	Maitre-Assistant, Université de Paris 6.
1983–1989:	Physicien du Globe (deuxime classe), Institut de Physique du Globe de Paris.
1989–1991:	Physicien du Globe (premiere classe), Institut de Physique du Globe de Paris.
1991–present:	Physicien du Globe (classe exceptionnelle), Institut de Physique du Globe de Paris.

BOOKS

- 01 *Inverse Problem Theory: Methods for Data Fitting and Model Parameter Estimation*. A. Tarantola. Elsevier, 1987.
- 02 *Geophysical Tomography*. Y. Desaubies, A. Tarantola, A., and J. Zinn-Justin (eds.). North-Holland, 1990.
- 03 *Inverse Problem Theory and Methods for Model Parameter Estimation*. A. Tarantola, SIAM (Society of Industrial and Applied Mathematics), 2005.
- 04 *Elements for Physics; Quantities, Qualities, and Intrinsic Theories*, A. Tarantola., Springer, 2006.
- 05 *Mapping of Probabilities, Theory for the Interpretation of Uncertain Physical Measurements*, A. Tarantola, (in preparation).
- 06 *Inverse Problems, Theory and Exercises*, A. Tarantola, (in preparation).

PUBLICATIONS

Note: I have around 90 publications in the scientific (reviewed) literature. Not all the them are fully original or totally interesting: as many, I fell victim of the “publish or perish” syndrome. I should not

have published so many papers. The list than follows contains only the list of paper that history should retain.

- 06 Relevance of Afar seismicity and volcanism to the mechanics of accreting plate boundaries. A. Abdallah, V. Courtillot, M. Kasser, A.Y. Le Dain, J.C. L epine, B. Robineau, J.C. Ruegg, P. Tapponnier, A. Tarantola. *Nature*, Vol. 282, No. 5734, 17–23, 1979.
- 09 Geodetic evidence for rifting in Afar. 2: Vertical displacements. A. Tarantola, J.C. Ruegg, J.C. L epine. *Earth and Planetary Science Letters*, **48**, 363–370, 1980.
- 15 Inverse Problems = Quest for Information. A. Tarantola, B. Valette. *J. Geophys*, **50**, 159–170, 1982.
- 16 Generalized Nonlinear Inverse Problems Solved Using the Least Squares Criterion. A. Tarantola and B. Valette. *Rev. Geophys. Space Phys.*, **20**, 219–232, 1982.
- 20 Volcanic or seismic prediction as an inverse problem. A. Tarantola, E. Trygvasson, and A. Nercessian. *Annales Geophysic ae*, **1**, 6, 443–450, 1983.
- 21 Three-dimensional inversion without blocks. A. Tarantola and A. Nercessian. *Geophys. J. R. astr. Soc.*, **76**, 299–306, 1984.
- 22 Three-dimensional seismic transmission prospecting of the Mont Dore volcano, France. Al. Nercessian, Al. Hirn, and Al. Tarantola. *Geophys. J. R. astr. Soc.*, **76**, 307–315, 1984.
- 24 Linearized inversion of seismic reflection data. A. Tarantola. *Geophysical Prospecting*, **32**, 998–1015, 1984.
- 25 Inversion of seismic reflection data in the acoustic approximation. A. Tarantola. *Geophysics*, **49**, 1259–1266, 1984.
- 29 Two-dimensional nonlinear inversion of seismic waveforms: numerical results. O. Gauthier, J. Virieux, and A. Tarantola. *Geophysics*, **51**, 1387–1403, 1986.
- 30 A strategy for nonlinear elastic inversion of seismic reflection data. A. Tarantola. *Geophysics*, **51**, 1893–1903, 1986.
- 32 Inverse Problem Theory: Methods for data fitting and model parameter estimation. A. Tarantola. Elsevier Science Publishers, Amsterdam, 1987.
- 40 Theoretical background for the inversion of seismic waveforms, including elasticity and attenuation. A. Tarantola. *PAGEOPH (Pure and Applied Geophysics)*, Vol. 128, Nos. 1/2, 1988.
- 43 Animal experiments. A. Tarantola. *Nature*, Vol. 340, page 424, 10 August 1989.
- 44 Wavelengths of earth structures that can be resolved from seismic reflection data. M. Jannane, W. Beydoun, E. Crase, D. Cao, Z. Koren, E. Landa, M. Mendes, A. Pica, M. Noble, G. Roeth, S. Singh, R. Snieder, A. Tarantola, D. Tr ez eguet, and M. Xie. *Geophysics*, **54**, 906–910, 1989.
- 71 Monte Carlo Sampling of Solutions to Inverse Problems. K. Mosegaard and A. Tarantola. *J. Geophys. Res.*, Vol. 100, No. B7, pages 12,431–12,447, 1995.
- 72 Le champignon qui cache la for et. A. Tarantola. *Le Monde*, No. 15755, 21 septembre 1995, page 14, 1995.
- 79 A logarithmic equation of state. J.P. Poirier and A. Tarantola. *Physics of the Earth and Planetary Interiors*, 109, pp. 1–8, 1998.
- 84 The Periodic Table of the Elements and the Ionization Potentials, A. Tarantola, Chemistry Preprint Server, Volume 2002, Issue 1, January 2002, page 275, web address: <http://www.sciencedirect.com/preprintarchive> (CPS: physchem/0201017).
- 86 Inverse Problem Theory and Methods for Model Parameter Estimation (second version of my 1987 book, entirely rewritten), A. Tarantola, SIAM, 2005.
- 87 Elements for Physics, Quantities, Qualities, and Intrinsic Theories, Springer, 2006.
- 88 Popper, Bayes, and the Inverse Problem, A. Tarantola, *Nature Physics*, Vol. 2, No. 8, August 2006, pages 492–494.

89 Image and Reciprocal Image of a Measure; Compatibility Theorem, A. Tarantola, 27 October 2008, arXiv:0810.4749.

INVITED COMMUNICATIONS

In the last ten years I have only presented communication in meetings if I have been invited by the organizers (will all expenses covered). Even that is too much: there are too many scientific meetings (as there are too many scientific publications). Here is the list of my more recent invited presentations:

- 75 New Trends on Seismic Inversion, Sergey Goldin's SEG Forum, Akademgorodok, Novosibirsk, Jan. 2006.
- 76 Industrial Research in Geophysics, TOTAL R&D Internal Workshp, Biarritz, France, Jan. 2006.
- 77 A Project for a Fully Relativistic Version of the Global Positioning System, Kodaikanal Observatory, India, June 2006.
- 78 Elements for Physics, National Aerospace Laboratories, Bangalore, India, June 2006.
- 79 A Project for a Fully Relativistic Version of the Global Positioning System, Indian Institute of Astrophysics, Bangalore, India, June 2006.
- 80 A Short Course on Inverse Theory, SPICE Workshop, Kinsale, Ireland, July 2006.
- 81 Mapping of probabilities, Columbia University, New York, December 2006.
- 82 Geophysical Inverse Problems, California Institute of Technology (Caltech), February 2007.
- 83 Mapping of Probabilities, Stanford University, February 2008.
- 84 French Volcanoes and Muon Tomography, University of Tokyo, June 2008.
- 85 Inverse problems in Astronomy, ELSA Workshop, University of Barcelona, September 2008.

October 2008