Alessandro TREVES

CURRICULUM VITAE

Personal:	born 6 Luglio 1960 in Viareggio (Lucca), Italy. Italian citizen.
Family:	married to Giordana, with three children (born 1991, 1994, 1998).
Position:	(full) professor at the International School for Advanced Studies, **S.I.S.S.A.**,
	via Bonomea 265, 34136 Trieste, Italy, tel. +39-040-3787623 or +39-349-2504602,
	e-mail: `ale@sissa.it`, http: `//people.sissa.it/~ale/`, since Oct. 2006

Academic curriculum

74-79	Liceo Classico **Michelangiolo**, Firenze.
79-80	B.A. student at **Yale** College, New Haven, Connecticut.
80-81	student at the Dipartimento di Fisica, Università di **Firenze**.
81-85	student at the Dipartimento di Fisica, Università La Sapienza di **Roma**.
1985	Laurea cum laude from the Università La Sapienza
	Thesis: Il Modello σ Nonlineare: Rinormalizzazione sul Reticolo e Proprietà di Scaling.
	Supervisors: (Prof. N. Cabibbo and) *Dr. G. Martinelli.*
85-86, 87-89	Ph.D. student at the Department of Physics, Hebrew University of **Jerusalem**.
87-88	partecipant in the interdisciplinary programme in Physics & Neuroscience
	at the Institute for Advanced Studies of the Hebrew University.
1990	Ph.D. from the Hebrew University
	Thesis: The Onset of Order in Associative Nets of Neurons.
	Supervisor: *Prof. D.J. Amit.*
89-92	post-doc at the Department of Experimental Psychology, University of **Oxford**,
	as a theorist in the neurophysiology laboratory of *Dr. E.T. Rolls.*
92-93	visiting researcher at the Interdisciplinary Laboratory of **S.I.S.S.A.**.
93-95	research fellow at the Biophysics Sector of S.I.S.S.A..
95-00	tenured research fellow at the Cognitive Neuroscience Sector of S.I.S.S.A..
00-06	associate professor at the Cognitive Neuroscience Sector of S.I.S.S.A..
and	
99-02	director, EU Advanced Course in Computational Neuroscience, Trieste and Obidos.
00-04	coordinator, Marie Curie Training Site in Computational Neuroscience at S.I.S.S.A..
01 (4 mo.)	visiting fellow, Institute of Theoretical Physics, U. California **S. Barbara**.
02 (3 mo.)	H.F.S.P. visiting fellow to the McNaughton-Barnes lab, U. of Arizona, **Tucson**.
03-12	visiting professor at the Centre for the Biology of Memory, **N.T.N.U.**, Trondheim.
05-07	elected by the F.E.N.S. Council to serve in the 5-member **N.E.N.S.** Committee
07-08 (4 mo.)	visiting fellow, Institute of Advanced Studies, Hebrew U. of **Jerusalem**.
08-	elected to the Royal Norwegian Society of Sciences and Letters, Trondheim.
11-13	on leave as Scientific Attache to the **Embassy of Italy** in Israel.
13-	visiting professor at the Centre for Neural Computation, **N.T.N.U.**, Trondheim.

Teaching, tutoring and related institutional activities:

88-89   Teaching Assistant in courses taught by Prof. H. Sompolinsky in Jerusalem.

89-92   T.A. and informal advisor for B.A. and Ph.D. students in Oxford, at the Departments
          of Physics and Experimental Psychology; B.Sc. and D.Phil. Theses examiner.

92-   Various teaching duties at S.I.S.S.A., in Biophysics and then Cognitive Neuroscience
          currently teaching every year the 20-hour course **Evolution of Neural Computation**,
          occasionally offered also to other students, e.g. in Statistical Physics or Complex Systems.

94-00   Tutor for the Master in **Science Communication** (a S.I.S.S.A. training programme for
          science writers, journalists and P.R. staff), in charge of its Neuroscience course in 97-98,
          supervisor of   Bruno Niceforo (Master in Sci. Comm., March 2000); then

05-09   Faculty of the (now defunct) Ph.D. in **Science and Society** (joint with U. Milano).

98-00   Lecturer in Neurophysiology at the Univ. of **Udine**, faculty of Medicine,
          for the 1st year diploma course **Anatomy and Physiology of the Nervous System**.

99-01   Local organizer (and lecturer) of the EU Advanced Course in **Computational Neuroscience**.

03-   teaching short courses at the Centre for the Biology of Memory in **Trondheim**, Norway.

03-04   Visiting professor at the Gonda Brain Center, Univ. of **Bar Ilan**, Ramat Gan, Israel to
          give an intensive 4-week, 48-hour Ph.D. course on the evolution of neuronal computation.

03-05   Invited professor at the Institute for Physics and Mathematics, **Tehran**, Iran, to give:
          an intensive 4-day (12+5-hour) course in the School of Cognitive Science in Nov-Dec 2003;
          a 3-week (36-hour) course in February 2005, both on the evolution of neuronal computation.

2007   Co-organizer of the first S.I.N.S. meeting of Italian Neuroscience students, **Torino**.

2011   Lecturer for a 30-hour course on Neural Networks at the Scuola Galileiana in **Padua**.

2013-15   Director of the **Master in Complex Actions**, an executive course produced at S.I.S.S.A.
          focused on innovation at the frontiers of scientific research combined with the analysis of
          complex processes and with an introduction to business administration and value creation.
          See http: //www.mca.sissa.it/ for a full description of the course.

2017   Maldacena invited professor to give a 20-hour course at the Centro Atomico in **Bariloche**.

2017   External lecturer for a 24-hour course at the Scuola Normale Superiore in **Pisa**.

Supervisor for:

Laurea (M.Sc.) students elsewhere (L. Cangiano, L. Eng. from U. Bologna, 1996; G. Settanni, L. Phys. from U. Torino, 1997; E. Turinetti, L. Phys. from U. Torino, 1998; A. Benucci, L. Phys. from U. Padova, 1998; F. Menghini, L. Phys. from U. Pavia, 2004; E. Russo, L. Phys. from U. Pisa, 2007; F. Stella, L. Phys from U. Bologna, 2009; F. Troiani, L. Phys. from U. Trieste, 2013; L. Romor, Master HPC. from SISSA-ICTP, 2015; S. Calderan, L. Phys. Compl. Sys. from U. Torino, 2015; M. Toso, L. Phys. from U. Trieste, 2016; M. Naim, L. Phys. from U. Roma I, 2017; S. Sausa, L. Phys. from U. Trieste, 2018);

visiting undergraduate (S. Shaw, 2004; A. Biswas, 2005; V. Gupta and A. Jafarpour, 2006; V.M.K. Namboodiri, 2007; M. Nikam, 2008, J. Mei, 2013; M. Govindarajan, 2014; E. Baldan and N. Chinichian, 2016), predoc (M. Katran, 2006; M.R. Soltanipour 2018) or graduate students (S. Schultz, 1997; A. Loczak and S. Womble, 2001; K. Longden and M. Lengyel, 2002 and 2003; N. van Rijsbergen, 2002-2003; A. Anishchenko, 2003; Y. Lakretz, 2014; J. Collins, 2017; K.I. Ryom, 2018);

SISSA M.Sc. Cogn. Neurosci. students D. di Grado (1988), F. Menghini (2006); L. Ciuffreda (2017)

Trento-SISSA *M.Sc.* students Z. Kaya (2014) and S. Jayaraman (2016); and for

Ph.D. students: **Stefano Panzeri** (Ph.D. in Cogn. Neurosc., Dec. 1996, postdoc in Oxford, Newcastle, lecturer then Reader in Manchester, senior researcher at I.I.T. Genova, professor in Glasgow, theory group director at I.I.T. Trento);

Francesco P. Battaglia (Ph.D in C. N. , Nov. 1998, postdoc in Tucson, Paris, assist. prof. in Amsterdam, prof., neurophys. lab dir. in Radboud, Nijmegen);

Carlo Fulvi Mari (Ph.D in C. N., Nov. 1998, postdoc in Loughboro, Liege, Leicester);

Marco Canepari (Ph.D in Biophys. in Febr. 1999, co-sup. with E. Cherubini, at the MRC);

Valeria Del Prete (Ph.D. in C. N., Oct. 2001, postdoc in Leuven, London, singer, teacher);

Yasser Roudi (Ph.D. in Neuroscience, Sept. 2005, postdoc at UCL, then at NORDITA, prof. at NTNU-Kavli Centre, Trondheim – Kandel Prize 2015 awardee);

Emilio Kropff (Ph.D. in N., Sept. 2007, postdoc at NTNU, CONICET researcher with his own lab at the Leloir Inst., Buenos Aires – ICTP Prize 2017 awardee);

Athena Akrami (Ph.D. in N., Jan. 2010, postdoc at SISSA with M.E. Diamond, then in Princeton, now lecturer setting up her own lab at U.C. London);

Erika Cerasti (Ph.D. in N., Jan. 2010, postdoc in Paris, then in Rome, poker pro);

Valentina Daelli (Ph.D. in N., Dec. 2010, postdoc at Bilkent, science communicator);

Eleonora Russo (Ph.D. in N., Jan. 2012, senior postdoc in Mannheim with D. Durstewitz);

Sahar Pirmoradian (Ph.D. in N., Jan. 2013, postdoc in Edinb., in high-tech in Calif.);

Federico Stella (Ph.D. in N., Jan. 2014, postdoc in Vienna with J. Csicsvari);

Ritwik Kulkarni (Ph.D. in N., May 2014, postdoc in Middlesex, in high-tech in England);

Chol Jun Kang (Ph.D. in N., Dec. 2017, now researcher at Kim Il Sung U., Pyongyang);

Vezha Boboeva (Ph.D. in N., Jan. 2018, short-term postdoc in limbo at SISSA);

and currently Zeynep Kaya, Massimiliano Trippa, Davide Spalla, Francesca Schonsberg, Oleksandra Soldatkina, Yfan Luo.

Mentor for *postdocs*: M. Mehta (1994), M. Bezzi and I. Samengo (1999-00), E. Haskell (2001), L. Franco (2000-02), N. van Rijsbergen (2003-08), A. Grüning (2004-07), Bailu Si (2008-11), E. Urdapilleta (2013-15), Yuqiao Gu (2014-15), S. Rosay (2015-17), K. Egumenovska (2016-18); currently S. Andreetta (2017-) and S. Di Santo (2018-).

Short schools & seminars:

Invited lecturer at several one-time **courses**: Krogerup, Denmark (1995); U. Autonoma Barcelona (1996); Europ. Dipl. Cognitive Science (1997); NATO Int. Sch. of Neurobiology, Erice (1997); Scuola di Biofisica SIBPA, Venice (1997); Borsellino Neurophysics College, I.C.T.P. (1998, 2001, 2004, 2007); F.E.N.S. Winter School, Kitzbuehel (2002); Les Houches Neurophysics summer school (2003); Erice "Caianiello" Cortical Dynamics school (2003); Paris ENS "Math and Brain" summer school (2005); Gulbenkian Hippocampus and Navigation workshop, Lisbon (2008); PACO spring school from Psychology to Robotics, Ohlstadt (2008); Multiple Time Scales in the Dynamics of the Nervous System, ICTP (2008); CNS Course, Göttingen (2008); Latin American School of Computational Neuroscience, Ribeirao Preto (2010); European Campus of Excellence "The Fate of the Memory Trace" Bochum (2011); Donders School on Neurometrics (2014, 2015); Spring College on Complex Systems, ICTP (2015); Comput. Neurosci. by the Mediterranean, American Un. Beirut (2016); Cajal Course on Computational Neuroscience Lisboa (2016); FENS-HERTIE Winter School, Obergurgl (2016); Norwegian Neuroscience Research Network Summer School, Trondheim (2016, 2017);

Among recent research **talks**:

2013: lunch seminar, *Rotman/Baycrest*; SysComp Series talk, *U. Toronto*; Theoretical Neuroscience seminar, *Columbia University*; Theoretical Approaches to BioInformation Systems, *Belgrade*; Leloir Inst., *Buenos Aires*; Argentinian Soc. Neurosci., Huerta Grande, *Cordoba*; Ist. Balseiro, *San Carlos de Bariloche*; Math Dept. seminar, *U. Porto*; Inst. Sci. Tech. Austria, *Vienna*.

2014: Spacebrain++ post-final symposium, *Jaffa*; J. Stefan Inst. Colloquium, *Ljubljana*; Neurophysics workshop, Kavli Inst., *Santa Barbara*; Scuola Normale, *Pisa*; Colloquium, Dip. Fisica, *U. Firenze*; Keystone Adult Neurogenesis Symposium, *Stockholm*; Ecole Normale Superieure, *Paris*; Colloquium, Dip. Fisica, *U. Trento*; Developing Excellence series, *U. Bolzano*.

2015: CASTL - Ctr. Adv. Stu. Theor. Linguistics, *Tromso*; Dept. Physics Colloquium, *U. Torino*; Intern. Graduate Sch. Neuroscience, *Bochum*; Lederberg-vonNeumann Symposium, *Princeton*.

2016: lunch neuroscience seminar, *Boston University*; Theor. Biophys. seminar at Emory University, *Atlanta*; Neurocampus seminar, *Bordeaux*; Italian Biophysics meeting, *Bari*

2017: Statistical Physics group, Centro Atomico, *San Carlos de Bariloche*; Mathematics of Memory Symposium, *Barcelona*; Centre for Neuroscience, *Alicante*; SISSA-Weizmann meeting, *Rehovoth*; Palestinian Neuroscience Init. Day, *Al Quds*; Meeting on Language and Cultures, *Beijing*;

2018: Quantitative Biology meeting, *Bilbao*; Centre for Neural Computation, *Trondheim*; BELBI 2018 opening lecture, *Belgrade*; Kavli Inst Theor. Physics, *Santa Barbara*; Kim Il Sung University International Symposium, *Pyongyang*;

Local organizer of the 39th **European Brain and Behavior Society** meeting, in Trieste, Sept. 2007. The meeting attracted 456 registered participants and virtually no sponsors, but still it generated a 20,000 Euro income for E.B.B.S.. Documented on `http://people.sissa.it/∼ale/EBBS2007/` Adjunct member of the E.B.B.S. Committee, 2006-2008, and elected member, 2008-2011.

Organizer with U. Bruzzo and R. Rumiati of the **More Geometrico** meeting, at SISSA, Oct. 2009.

Initiator and organizer with O. Güntürkün and A. Sadoyan of the first **Ararat Memory** meeting, in Yerevan, Armenia, April. 2010. The meeting, *Looking Back at Mount Ararat: Diversity and Cross-Fertilization among Approaches to Memory*, included a 3-day school and a 3-day workshop, supported with funds obtained from the Volkswagen Foundation, from the FENS-IBRO European Neuroscience Schools Program and from EBBS.

co-Director of the Quantit. Biol. Winter School on **Systems Neuroscience** at ICTP, Dec. 2014.

co-Director/Organizer with D. Crepaldi of the TEX2016 Summer School on **Language Learning** at SISSA, July 2016.

Director/Organizer of the TEX2018 M-GATE School **Under the Surface of Memory Phenomena** at SISSA, June-July 2018.

Convenor of the TEX2018 Symposium **Remembering Daniel Amit, and Beyond** at SISSA, June 30, 2018.

I have taken up several **administrative** duties since joining SISSA, serving in the library and computer committees, as vice-Coordinator of the C. N. sector, and as its Coordinator in 2000-01, before leaving on sabbatical; and taking up again the role of Coordinator in 2010-11, before leaving again, to Tel Aviv; in 2004-05, I planned the move of the C.N. sector to new premises; in 2005-07, I served as the SISSA Director's Delegate for Research; in 2014, on the Search committee for a new SISSA Director; since 2013 I serve on the coordination committee with the universities of Trieste and Udine; 2013-16 on SISSA's hiring committee, and in 2016-18 I have served as coordinator of the Area of Neuroscience.

Reviewing & refereeing:

Referee (3-4 papers/month) for a broad spectrum of scientific journals, in physics (*Physical Review, Phys. Rev. Lett., J. of Physics, . . .*), neural networks (*Network, Neural Computation, J. Comput. Neurosci., . . .*), neuroscience (*J. Neurosci., Hippocampus, J. Neurophysiol., . . .*), cognitive science (*Cognition, Psychol. Review., Behav. Brain Sci., . . .*). *Ad hoc* reviewer for *Science, Nature, PNAS*.

Action Editor for *J. of Computational Neuroscience* (since 2000), *Cognition* (2004-08), *Cognitive Neurodynamics* (2010-18), *Biolinguistics* (2010-17). Associate Editor for the *Journal of Neuroscience* (2011-16). Reviewer for *Faculty of 1000 Biology* (2009-13).

Reviewer for conferences: N.I.P.S., I.C.A.N.N., Elba (co-org. of the 1994 Wksp.), C.N.S., I.C.C.M..

Grant reviewer for the National Science Foundation (USA), the Human Frontier Science Program, the Israel Science Foundation, the Dutch Organization for Scientific Research, the US-Israel Binational Science Foundation, the French Agence Nationale de la Recherche, the Scientific Foundation of Ireland.

On the **review panel** of the German BMBF "Understanding Thought" initiative for the 35ME establishment of the first 4 Bernstein Centres in computational neuroscience (2003-4); the subsequent 13ME grant program on "Cognitive Performance and Relevant Disorders in Humans" (2005-6); the Bernstein initiative review and Bernstein Awards (2006-9) and the 45ME 5 second-round centers (2008-9).

On the ex-post **evaluation panel** of the VolksWagenStiftung "Dynamics and Adaptivity of Neuronal Systems" 25 ME funding initiative (1999-2005) (May-October 2006).

On the **research grant review panel** of the Human Frontier Science Program (2006-10).

On the **review panel** of the (first)Canadian-Israeli neuroscience funding initiative (2015).

Grant reviewer for national (SIR) and regional (U. Trento) funding initiatives (2014-).

Elected by the FENS Council to the **Program Committee** for the FENS Forum 2012 in Barcelona.

Invited **oversight committee** member for the Intern. Neuroinf. Coord. Fac. initiative on description standards in neural network modeling (2008-11).

The **review of proposals** for scientific **events**, and for **scientific and technological research** projects, was a main component of my duties at the Italian Embassy in Tel Aviv, across a wide spectrum of disciplines.

Member of the **review committee** of the International Neuroscience Doctoral Program at the Champalimaud Neuroscience Institute in Lisbon (2014-).

External referee for the selection among candidates to a full professor (W3) position in Computational Neuroscience at the Bernstein Centre in Göttingen, in November 2004.

Committee member for the selection among candidates to an associate professor (II fascia) position in Physiological Psychology and Psychobiology at the Univ. of Bologna, in January-March 2005.

Invited **external examiner of Ph.D. Theses** in U. Autonoma Madrid (A. Renart, 2000); King's College, London (N. Skantzos, 2001); University of Newcastle (F. Petroni, 2002); University of Edinburgh (P. Aguiar, 2005); E.P.F. Lausanne (R. Chavarriaga, 2005); Din. Non-Lineari e Sist. Compl., Univ. di Firenze (A. Morelli, C Ghilardi + 3 others, 2006); Inst. für Biologie, Humboldt-Universität zu Berlin (M. Franzius, 2008); E.H.E.S.S. Paris (L. Bonnasse-Gahot, 2009); U. Oporto (M.L. Castro Guedes, 2013); U. P.M.Curie Paris 06 (B. Babayan, 2014); U. Paris Descartes (A. Dubreuil, 2014); E.N.S. Paris (G. Tavoni, 2015); Ruhr U. Bochum (T. Neher, 2015); Dip. Ling. Lett., Uni. Padova (F. Franzon, 2016); Dept. Comp. Sci., Hebron Poly. (A Natsheh, M.Sc., 2016); Dept. Eng., Univ. Cambridge (D. Festa, 2016); Dept. Biol., Univ. Crete (S. Chavlis, 2017); Fak. Lebenwiss., Humboldt-Universität zu Berlin (T. D'Albis, 2018); I.S.T. Austria (I. Gridchyn, 2018); Fak. Elektr. Inform., Tech. Univ. Muenchen (N. Waniek, 2018).

Grants – experience with writing and managing research funding proposals:

- *Parallel Processing in Neuronal Networks* (1990-93, collaboration funded by the E.C. B.R.A.I.N. Initiative: Cambridge, Edinbourgh, Genova, Oxford, Roma, Saclay; the grant funded my postdoc and I participated in writing and coordinating research reports).

- *How the Hippocampus Operates in Memory* (1992-95, collaboration funded by the Human Frontier Science Program: Oxford, Paris, Pittsburgh, Toyama, Tucson; the grant funded my participation to all meetings as a former Oxford postdoc, and I helped write proposal and reports).

- *Computations in Neuronal Networks in the Brain* (1993-1997, collaboration funded by the H.C.M. programme of the E.C.: Barcelona, Oxford, Pars, Roma, S.I.S.S.A., Southampton, Toulouse; my group was awarded 49.5 kEuro).

- *Neural Networks* (funding budget awarded during 1994, 1995 e 1996 by I.N.F.N. (the Italian research agency for fundamental Physics) to M. Budinich from U. di Trieste and myself; I have used only ca. 15 Mlit.).

- *Analisi Computazionale dei Circuiti dell'Ippocampo* (1994-95, 10 Mlit. awarded by C.N.R. - com. BioMed, to support my own research project).

- *Spatio-Temporal Chaos in Biological Excitable Systems* (1996-97, 10 Mlit. awarded by C.N.R. - com. Fisica, to support my contribution to a collaboration: Genova, Pisa-C.N.R. [Biofisica], Pisa-C.N.R. [Fisiologia Clinica], S.I.S.S.A., Trento).

- *Operation of the Hippocampus and Connected Cortical Areas in Memory and Spatial Function* (1998-2001, collaboration funded by the Human Frontier Science Program: Oxford, Trieste, Utah; my group has been awarded 124 k$).

- *Spatio-Temporal Analysis of Cortical Activity* (1999-2000, collaboration funded by the Italian Ministry of Research (M.U.R.S.T.), in which I have appeared as formally responsible for Mathew Diamond and his lab).

- *EU Advanced Course in Computational Neuroscience* (1999-2002, I wrote the 1999 application and helped draft the renewal for the course, which I have co-directed; the overall yearly budget, including additional funding, has been ca. 100 kEuro).

- *ESF summer Symposium in Neuroinformatics* (1999-2002, I have helped to write the application and acted as local organizer of this weekend event, scheduled in connection with the EU course; yearly budget ca. 30 kEuro).

- *Bilingualism and Brain Plasticity* (an application to organize a workshop held at SISSA in March 2001, which has been funded by the EU with 24 kEuro).

- *Convergent Techniques for Computational Neuroscience at SISSA* (2000-2004, an application to be recognized as a Marie Curie Training Site, which has been funded by the EU with 150 kEuro).

- *The Origin of Isocortical Lamination* (2000-2002, an application to MURST for a joint research project with Mathew Diamond, funded with 75 Mlit.).

- *Methods to Assess the Functional Role of Hippocampal Subfields* (an application to the H.F.S.P. for a short-term fellowship to visit the Tucson lab of Prof. Bruce McNaughton, funded with ca. 6k$).

- *Mechanisms Underlying Cortical Processing of Emotional Facial Expressions* (2004-2008), I have coordinated a collaboration with Univ College London (Ray Dolan) and the Univ of Washington in Seattle (Bharathi Jagadeesh), funded by the Human Frontier Science Program with 1,050 k$.

- *Reducing Language Processing to General Cortical Computation* (2006-2007) Italian Ministry funds for the internazionalization of research and training, in collaboration with Bar Ilan University (Susan Rothstein), to cover travel expenses up to 20 kEuro.

- *Space Coding in Hippocampo-Entorhinal Neuronal Assemblies* (2008-2011) EU-funded 7th Framework, 7.7 MEuro project including 11 partners in Trondheim, London, Heidelberg, Zurich, Rehovot and Trieste, and coordinated by Edvard Moser; my group received 218 kEuro.

- *Ararat Memory Meeting*: my proposal to organize an event in Yerevan (in April 2010) was funded by the Volkswagen Stiftung (36 kEuro) and supported by FENS-IBRO (9 kEuro) and EBBS (7 kEuro).

- *Grid Cells: from Brains to Technical Implementation* (2013-2016) EU-funded 7th Framework, ICT 2.9 MEuro project including four partners in Trondheim, Edinburgh (Richard Morris), Munich (Jorg Conradt) and Trieste, and coordinated by Edvard Moser; my group received 412 kEuro.

- *Analog Computations Underlying Language Mechanisms* (2016-2020), I have coordinated a collaboration with Tel Aviv University (Naama Friedmann) and Ecole Normale Superieure in Paris (Remi Monasson), funded by the Human Frontier Science Program with 1,050 k$.

- *Mapping Attractor Dynamics with Structural Equation Modelling* (2017-2018) a TALENTS[3] fellowship programme to fund a 18-month postdoc for Dr Kristina Egumenovska.

- *M-GATE: Memory research: Groundbreaking, Applied, and Technological Exchanges* (2017-2011) EU-funded Horizon 2020 Marie Curie 3.9 MEuro Action coordinated by Francesco Battaglia, to fund 15 Early Stage Researchers (PhD students), of whom 2 are based at SISSA.

- several other unsuccessful grant applications!

Books and science **communication**:

A. Cattaneo e A. Treves *Cervello e Memoria* (Editoriale Scienza, Trieste, 1995)
E.T. Rolls e A. Treves *Neural Networks and Brain Function* (Oxford U.P., Oxford, 1998)
A. Treves *Come Funziona la Memoria* (Bruno Mondadori, Milano, 1999)
Several radio and TV interviews, Science Week lectures, and in other local and national frameworks,
e.g. at the SISSA symposium on "Neurofisiologia del Cervello e Libero Arbitrio" (Sept 2005);
the XIII Convegno di Informatica Umanistica on "Ricordare o Dimenticare?" (Oct 2006);
FEST, Trieste (April 2007); Incontri del Chiostro alla Facoltà di Ingegneria di Roma (March 2008);
Progetto Enel: Incontri con gli Scienziati, Cagliari (May 2008); Incontri nei Licei, Trieste (May 2009);
Science for Peace, Milano (November 2013); Guest at the Nautilus TV show (October 2014)
Vicenza (October 2016); TEDx Lecce (November 2016); Orvieto Scienza (February 2017) . . .
Author of the Neuroscience "Grand Question" for the national science web-site *Archimedes*.

H-index = 47 (Google Scholar), October 2018; papers with over 50 cites are marked with ***** in the publication list.

Publications - full papers

[1] *Massimo Falcioni and Alessandro Treves. The non-linear Sigma model: 3-loop renormalization and lattice scaling. *Nuclear Physics*, B265 [FS15]:671–688, 1986.

[2] *Alessandro Treves and Daniel J Amit. Metastable states in asymmetrically diluted Hopfield networks. *Journal of Physics*, A 21:3155–3169, 1988.

[3] *Alessandro Treves and Daniel J Amit. Low firing rates: An effective Hamiltonian for excitatory neurons. *Journal of Physics*, A 22:2205–2226, 1989.

[4] *Daniel J Amit and Alessandro Treves. Associative memory neural network with low temporal spiking rates. *Proceedings of the National Academy of Sciences of the USA*, 86:7871–7875, 1989.

[5] Alessandro Treves. Threshold-linear formal neurons in auto-associative nets. *Journal of Physics*, A 23:2631–2650, 1990.

[6] *Alessandro Treves. Graded-response neurons and information encodings in autoassociative memories. *Physical Review*, A 42:2418–2430, 1990.

[7] *Edmund T Rolls and Alessandro Treves. The relative advantages of sparse versus distributed encoding for associative neuronal networks in the brain. *Network*, 1:407–421, 1990.

[8] Alessandro Treves. Dilution and sparse coding in threshold-linear nets. *Journal of Physics*, A 24:327–335, 1991.

[9] Alessandro Treves. Are spin-glass effects relevant to understanding realistic autoassociative networks? *Journal of Physics*, A 24:2645–2654, 1991.

[10] *Alessandro Treves and Edmund T Rolls. What determines the capacity of autoassociative memories in the brain? *Network*, 2:371–397, 1991.

[11] Alessandro Treves, Orazio Miglino, and Domenico Parisi. Rats, nets, maps and the emergence of place cells. *Psychobiology*, 20:1–8, 1992.

[12] *Alessandro Treves and Edmund T Rolls. Computational constraints suggest the need for two distinct input systems to the hippocampal CA3 network. *Hippocampus*, 2:189–199, 1992.

[13] *Dominic O'Kane and Alessandro Treves. Short and long range connections in autoassociative memory. *Journal of Physics*, A 25:5055–5069, 1992.

[14] *Alessandro Treves. Mean-field analysis of neuronal spike dynamics. *Network*, 4:259–284, 1993.

[15] *Martin J Tovee, Edmund T Rolls, Alessandro Treves, and Ray P Bellis. Information encoding and the responses of single neurons in the primate temporal visual cortex. *Journal of Neurophysiology*, 70:640–654, 1993.

[16] *Alessandro Treves and Edmund T Rolls. Computational analysis of the role of the hippocampus in memory. *Hippocampus*, 4:374–391, 1994.

[17] *Alessandro Treves and Stefano Panzeri. The upward bias in measures of information derived from limited data samples. *Neural Computation*, 7:399–407, 1995.

[18] *Alessandro Treves. Quantitative estimate of the information relayed by the Schaffer collaterals. *Journal of Computational Neuroscience*, 2:259–272, 1995.

[19] *Stefano Panzeri and Alessandro Treves. Analytical estimates of limited sampling biases in different information measures. *Network*, 7:87–107, 1996.

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