CURRICULUM VITAE BY PAOLO MAREMONTI

A) PRELEMINARY NEWS ON THE STUDY ACTIVITY.

Born in Portici (NA) on 29 June 1957, at 1980 I achieved with summa cum laude the degree in Mathematics at the University of Naples.

My study and research activity on the Navier-Stokes equations begins with the degree thesis, supervisor G.P. Galdi, which focuses on an article by J.Leray "Sur le movement of a liquid visqueux emplissant l'espace".

In October 1980 I was awarded a INdAM (“F.Severi”) scholarship for one year. In this year I followed at the Institute the following courses:
Functional Analysis, by G. Cimmino;
Potential theory, by A. Avantaggiati;
Dynamic systems, by G. Gallavotti;
Stability, by L. Salvadori.

At the end of the academic year I sit an exam interview at the aforementioned institute and the Examination Commission issues a positive judgment on the activity.
This judgment allows me to obtain the extension of the scholarship for the next academic year.
In the 83-84 academic year, through a competition based on qualifications and interview, I was assigned by the Institute Nat. by Alta Mat. a two-year research grant.
In November 1986 I became a researcher for the Mathematical Physics at the Faculty of Eng. of the U. of Basilicata (Potenza).
Following a public competition, in July 1999 with Rector's Decree I received the appointment of Associate Professor at the Faculty of Sciences of the U. of Basilicata.
Following a public competition, at 2000 I obtained a position of full professor at the Faculty of Sciences of the Second U. of Naples, today the U. of Campania "L.Vanvitelli".

B) TEACHING ACTIVITIES SINCE 2000

(U. ≈ University) In the academic year 00/01 as Full Professor I hold the teaching of Institutions of Mathematical Physics at the Faculty of Sciences of the Second U. of Naples.

In the academic years 01/02 - 05/06 I hold the teaching of Math. Physics by title at the Faculty of Sciences of the Second U. of Naples.

In the 03/04 – 04/05 academic year, as a temporary position, the teaching of Differential Equations of Math. Physics both at the Faculty of Sciences of the Second U. of Naples.

In the 05/06 academic year, I teach Mathematical Physics 3 by a temporary position the teaching of Higher Mathematics both at the Faculty of Sciences of the Second U. of Naples.
From the academic year 08/09 - 11/12 I teached Analisi Superiore at the Faculty of Science of the Second U. of Naples.

In the academic year 11/12 I cover the teaching of Matematiche Superiori at the Faculty of Science of the Second U. of Naples.

From the academic year 12/13 to today I teach Rational Mechanics for the degree course in Mathematics at the Department of Math. and Physics of the U. of Campania "L.Vanvitelli".

In the academic year 13/14 – 14/15 I covered the teaching of Differential Equations of Math. Physics for the degree course in Mathematics at the Department of Math. and Physics of the U. of Campania "L.Vanvitelli".

From the academic year 2014/2015 to today, I teach Navier-Stokes Equations for the Master's Degree in Math. at the Department of Math. and Physics of the U. of Campania "L.Vanvitelli" .

C) ACTIVITIES IN PHD AND IN POST-DOC TRAINING COURSES.

a) member of the jury to award the title of Ph.D to Dr. A. Tartaglione, XIII cycle PhD in Mathematics of the U. of Naples Federico II, thesis "Existence and Uniqueness of classical solutions of boundary problems associated with the Stokes system".

b) member of the jury to award the Ph.D title to Dr. A. L. M. V. Silvestre, at the Department of Mathematics of the Superior Technical Institute of the Universidade Tecnica de Lisboa, thesis "Mathematical Analysis of the Motion of a Rigid Body in a Viscous Liquid"

c) supervisor of the thesis "Asymptotic properties in (t, x) of solutions to the Navier-Stokes equations in half-space" for the Ph.D title to Dr. F. Crispo, achieved at the Dep. of Mathematics of the U. of Naples Federico II.

d) member of the Board of Professors of the PhD in Mathematics of the U. of Naples "Federico II" from 2003 to 2013.

e) member of the jury to award the title of Doctor of Research to Dr. G. Mazzone at the U. of Salento.

f) course at the XXVIII Summer School of Math. Physics of the GNFM (INdAM), with a cycle of n. 6 llectures: "Viscous Fluid Motions: a Qualitative Analysis of Perturbations".

g) course at the XLIV Summer School of Math. Physics of the GNFM (INdAM), with a cycle of n. 6 lectures: "Nonstationary Navier-Stokes equations: weak solutions and introduction to related problems ".

h) course at “The 5th Japanese-German Intern. Workshop on Math. Fluid Dynamics”, June 11-15th, 2012, at Waseda U., Tokyo, Japan, with a cycle of n. 5 lectures: "Stokes and Navier-Stokes IBVP with nondecaying data".

i)Università Cattolica del Sacro Cuore, January 26th - 30th, 2015 “Twelve hours with Mathematical Physics”: *Navier-Stokes equations.*

D) BRIEF REPORT ON SCIENTIFIC ACTIVITY.

Cooperation in research activity:

G.P. Galdi, U. of Pittsburgh (USA);
M. Padula, U. di Ferrara;
V.A. Solonnikov, Steklov Institue of St. Petersburg (Russia);
F. Crispo, U. della Campania "L. Vanvitelli";
T. Hishida, U. of Nagoya (Japan);
M. Ruziska, U. of Albert-Ludwigs-University Freiburg (Germany);
M. Hieber, U. of Darmstadt (Germany);
S. Shimizu, U. of Kyoto (Japan).

Even today I carry out research with some of them.

My research activity has turned to some mathematical aspects related to the Navier-Stokes equations which is assumed as a model for the dynamics of viscous, incompressible and homogeneous fluids.
Analogous questions for non-Newtonian fluids is not lacking in research activity.

I give a wide attention to the Navier-Stokes initial boundary value problems in unbounded domains, with particular attention to the questions of the stability of stationary fluid motions and attractivity proprieties of the unperturbed motions, continuous dependence on the initial data. This investigation has coupled with some results of semigroup proprieties of the solutions to the Stokes problem.
Concerning the perturbations of the motion steady and the rest state, the results of stability are stated with respect metrics physically meaning as the L^2 norm of the solutions, which is equivalent to twice the kinetic energy of the fluid.
I have also considered problems of punctual stability in space-time variables.
This research has reached sufficient interest which has closed in some articles.
Semigroup properties for solutions to the Stokes problem concerning the L^p theory with p arbitrary greater than 1 and equal infinity.
Related papers: [61,59,58,54,49,41,40,35,33,32,26,20,17,11,5]

I have considered problems of uniqueness of the classical solutions of the Navier-Stokes equations. The goal is to determine the wider class in which uniqueness holds for non-decaying solutions. That is, beyond of this class the claim of the uniqueness of the solutions fails. The "optimality" of the class is realized by means of counterexamples that were physically significant.
Related papers: [57,28,27]

In the above setting of non-decaying solutions, the problem of the existence, local and global in time, of solutions non-converging at infinity has been an open problem. In this sense contributes are achieved either of regular solutions (a priori local in time) and weak solutions global in time. The results obtained are the early in this special topic.
Related papers: [30,25,22,19,11,10,9,1]

I had to consider some purely analytical questions that led me to some results, which, beyond their interest in the problems studied by me, seemed interesting in the context of purely analytical.
These are essentially a priori limitations for functions belonging to suitable Sobolev spaces and limitations concerning solutions of particular differential operators.
Related papers: [53,42,39,34]

As is known, a fundamental question relating to partial differential equations is the problem of the regularity of weak solutions. In this topic I considered some questions of regularity of weak solutions to the Navier-Stokes equations. The results go in the wake of some results already known in literature.
Instead, concerning non-Newtonian fluids as preliminary study is given special attention to p-Laplacian operator and to a modified p-Stokes problem.
Related papers: [56,55,24,21,18,16,13,7,6,4,2]

Within the sphere of propagation and diffusion phenomena, the study of phenomena that occur with periodic law, for example, with respect to the temporal variable is of particular interest. This study was developed for the equations of fluids and heat propagation.
Related papers: [50,38,31,3]

E) STUDY STAY ABROAD AND IN ITALY

In April 1984 I had a study stay at the Math. Steklov Inst. in Leningrad, opportunity to undertake a scientific collaboration with Prof. V.A. Solonnikov.

In the period January-February 2007 I was at the Department of Mathematics of the U. of Ferrara where I carried out study and research activities with Profs. M. Padula and V.A. Solonnikov.

For the period January-March 2008 I had a study stay at the Department of Appl. Math. of the U. of Pittsburgh.

In February 2010 Visiting Professor at the University of Jinhau.

In Augustus 2013 Visiting Professor at the Waseda University (Tokyo).
In Augustus 2015 Visiting Professor at the Waseda University (Tokyo).

In Augustus 2016 Visiting Professor at the Kyoto University.
In Augustus 2017 Visiting Professor at the Kyoto University.
In Augustus 2018 Visiting Professor at the Kyoto University.

F) INVITED SPEAKER IN THE LAST YEARS.

1) The 40th Sapporo Symposium on PDE, Hokkaido U., August 19-21th, 2015
2) Intern. Research Training Group 1529 Math. Fluid Dynamics, Bad Boll, Germany, May 7-11th, 2018.
3) WASCOM XX Intern. Conf. Waves and Stability in Conti. Media, June 10-14th, 2019, Maiori (SA) Italy
4) Fudan International Seminar on Analysis, PDEs, and Fluid Mechanics, 2020, February 18
5) Seminar on Partial Differential Equations Seminar of the Ne˘cas Center, 2021, May 4

G) MEMBER OF SCIENTIFIC COMM. OF INTER. MEETINGS IN THE LAST 10 YEARS.

1) MATHFLOWS, Porquerolles, (France) October 21-26th, 2012.

2) Eq. alle Derivate Parziali nella Dinamica dei Fluidi, Centro di Ricerca Matem. E. De Giorgi, SNS Pisa (Italy) (2018).

3) Vorticity, Rotation and Symmetry V - Global Results and Nonlocal Phenomena, CIRM Marsiglie (France) October 26-30th, 2020.

1) (2023) On the stability of steady-state solutions to the Navier-Stokes equations in the whole space J. Math. Fluid Mech. 25, no. 1, G.P. Galdi and P.Maremonti.

2) 2023. On The Two-Dimensional Stokes Problem in Exterior Domains: The Maximum Modulus Theorem, JMFM, 24 (1)

3)2022. A new proof of existence in the $L3$-setting of solutions to the Navier-Stokes Cauchy problem, EMS Ser. Ind. Appl. Math., 3 EMS Press, Berlin, Crispo, Francesca; Maremonti, Paolo

4) 2021. Navier–Stokes Cauchy Problem with $|v_0(x)|^2$ Lying in the Kato Class K_3, Mathematics **9 (11)** 2021, Crispo, F.; Maremonti, P.

5) 2021. On the uniqueness of a suitable weak solution to the Navier–Stokes Cauchy problem, SN Partial Differential Equations and Applications, **2** (2021) Crispo, F.; Maremonti, P.

6) 2021. Navier–Stokes equations: an analysis of a possible gap to achieve the energy equality, Ricerche di Matematica, Crispo, F.; Grisanti, C.R.; Maremonti, P.

7) 2021. Some New Properties of a Suitable Weak Solution to the Navier–Stokes Equations, T. Bodn´ar et al. (eds.), Waves in Flows, h.6 in Advances in Mathematical Fluid Mechanics, T. Bodn´ar et al. editors, Crispo, F.; Grisanti, C.R.; Maremonti, P.

8) 2020. A remark on the non-uniqueness in L^∞ of the solutions to the two-dimensional Stokes problem in exterior domains, J. of Evolution equations, Maremonti, P.

9) 2019. On the $L^p - L^q$ estimates of the gradient of solutions to the Stokes problem, JOURNAL OF EVOLUTION EQUATIONS pp 1-32 . Maremonti, P.

10) 2018. Global existence of solutions to 2-D Navier-Stokes flow with non- decaying initial data in half-plane. J. DIFFERENTIAL EQUATIONS 265 (2018), no. 10, 5352-5383. Maremonti, P.; Shimizu, S.

11) 2018. Global existence of solutions to 2-D Navier-Stokes flow with non-decaying initial data in exterior domains. J. MATH. FLUID MECH. 20 (2018), no. 3, 899?927. Maremonti, P.; Shimizu, S.

12) 2018. Navier-Stokes flow past a rigid body: attainability of steady solu- tions as limits of unsteady weak solutions, starting and landing cases. J. MATH. FLUID MECH. 20 (2018), no. 2, 77-800. Hishida, T; Maremonti, P.

13) 2018. A note on Prodi-Serrin conditions for the regularity of a weak solution to the Navier-Stokes equations. J. MATH. FLUID MECH. 20 (2018), no. 2, 379?392, Maremonti ,P.

14) 2018. Electrorheological fluids: Ill posedness of uniqueness backward in time. DOI:10.1016/j.na.2017.12.014. pp.47-69. In NONLINEAR ANALYSIS - ISSN:0362-546X vol. 170 Abbatiello, A.; Crispo, F.; Maremonti, P.

15) 2017. A remark on the partial regularity of a suitable weak solution to the Navier-Stokes Cauchy problem. DOI:10.3934/dcds.2017053. pp.1283-1294. In DISCRETE AND CONTINUOUS DYNAMICAL SYSTEMS - ISSN:1078-0947 vol. 37 (3) Crispo, F.; Maremonti P.

16) 2016. On the high regularity of solutions to the p-Laplacian boundary value problem in exterior domains. DOI:10.1007/s10231-015-0491-1. pp.821- 834. In ANNALI DI MATEMATICA PURA ED APPLICATA - ISSN:0373- 3114 vol. 195 (3) Crispo, F., Grisanti, C.R., Maremonti P.

17) 2015. Weak Solutions to the Navier?Stokes Equations with Data in L(3, ∞) DOI:10.1007/978-3-319-66764-5 8. pp.161-194. In Mathematics for Nonlinear Phenomena: Analysis and Computation: International Conference in Honor of Professor Yoshikazu Giga on his 60th Birthday. In SPRINGER PROCEEDINGS IN MATHEMATICS & STATISTICS - ISSN:2194-1009 vol. 215 - Maremonti P.

18) 2016. Bounded analyticity of the stokes semigroup on spaces of bounded functions. DOI:10.1007/978-3-0348-0939-9 15. pp.275-289. In Advances in Mathematical Fluid Mechanics - Dedicated to Giovanni Paolo Galdi on the Occasion of His 60th Birthday - ISBN:978-3-0348-0938-2 In Advances in Math- ematical Fluid Mechanics

19) 2016. On the spatial asymptotic decay of a suitable weak solution to the Navier-Stokes Cauchy problem. DOI:10.1088/0951-7715/29/4/1355. pp.1355- 1383. In NONLINEARITY - ISSN:0951-7715 vol. 29 Crispo, Francesca; Mare- monti, Paolo

20) 2015. A high regularity result of solutions to modified p-Stokes equa- tions. DOI:10.1016/j.na.2014.10.017. pp.97-129. In NONLINEAR ANALYSIS - ISSN:0362-546X vol. 118 Crispo F; Maremonti P

21) 2014. on the Stokes problem in exterior domains: the maximum mod- ulus theorem. DOI:10.3934/dcds.2014.34.2135. pp.2135-2172. In DISCRETE AND CONTINUOUS DYNAMICAL SYSTEMS - ISSN:1078-0947 vol. 34 (5) Maremonti P

22) 2013. Higher regularity of solutions to the singular p-laplacian parabolic system. pp.849-894. In ADVANCES IN DIFFERENTIAL EQUATIONS - ISSN:1079-9389 vol. 18 Crispo F; Maremonti P

23) 2012. On the Navier-Stokes Problem in Exterior Domains with Non Decaying Initial Data. DOI:DOI 10.1007/s00021-011-0083-9. pp.633-652. In JOURNAL OF MATHEMATICAL FLUID MECHANICS - ISSN:1422-6928 vol. 14 (4) Galdi GP; Maremonti P; Zhou Y

24) 2011. A Remark on the Stokes Problem with Initial Data in L^1. pp.469- 480. In JOURNAL OF MATHEMATICAL FLUID MECHANICS - ISSN:1422- 6928 vol. 13 (4) - Maremonti, P.

25) 2009. Stokes and Navier-Stokes problems in a half-space: the exis- tence and uniqueness of solutions a priori nonconvergent to a limit at infinity. DOI:10.1007/s10958-009-9458-3. pp.486-523. In JOURNAL OF MATHEMAT- ICAL SCIENCES - ISSN:0449-2757 vol. 159 (4) Maremonti P

26) 2008. Navier-Stokes equations in aperture domains: global existence with bounded flux and time-periodic solutions. pp.249-277. In MATHEMAT- ICAL METHODS IN THE APPLIED SCIENCES - ISSN:0170-4214 vol. 31 Crispo, F.; Maremonti, P.

27) 2006. On the (x,t) asymptotic properties of solutions of the Navier- Stokes equations in the half-space.. pp.3735-3767. In JOURNAL OF MATHE- MATICAL SCIENCES - ISSN:1072-3374 vol. 136 Crispo, F.; Maremonti, P.

28) 2005. Nonstationary Stokes equations in a half-space with continuous initial data. pp.1886-1914. In JOURNAL OF MATHEMATICAL SCIENCES - ISSN:1072-3374 vol. 127 Maremonti P; Starita G.

29) 2004. An interpolation inequality in exterior domains. pp.11-39. In RENDICONTI DEL SEMINARIO MATEMATICO DELL'UNIVERSITA' DI PADOVA - ISSN:0041-8994 vol. 112 CRISPO F; Maremonti P

30) 2000. On the Stokes equations: the maximum modulus theorem. pp.1047- 1072. in mathematical models and methods in applied sciences - ISSN:0218-2025 vol. 10 Maremonti P

31) 1999. Existence, uniqueness and attainability of periodic solutions of the navier-stokes equations in unbounded domains. pp.719-746. In JOURNAL OF MATHEMATICAL SCIENCES - ISSN:1072-3374 vol. 233 Maremonti P; M.PADULA

32) 1997. On nonstationary Stokes problem in exterior domains. pp.395-449. In ANNALI DELLA SCUOLA NORMALE SUPERIORE DI PISA. CLASSE DI SCIENZE - ISSN:0391-173X vol. 24 Maremonti P; V.A. Solonnikov

33) 1997. On estimates for the solutions of the nonstationary Stokes problem in Sobolev anisotropic spaces with a mixed norm. pp.124-150. In JOURNAL OF MATHEMATICAL SCIENCES - ISSN:1072-3374 vol. 87 Maremonti P; V.A.Solonnikov