Portugaliae Mathematica and its Exchange Library

by José Francisco Rodrigues*

In Portugal the first published books on mathematical sciences are dated of the Discovery Era, namely the remarkable Zacutus' astronomical tables (1496) and an influential book on Arithmetic's for the commerce by Gaspar Nicolás (1519), preceding the several books by Pedro Nunes (1502–1578) written in the Renaissance tradition. However, only in the XIX century Francisco Gomes Teixeira (1851–1933) founded the first mathematical journal in the Iberian world independent of any academic institution, the *Jornal de sciencias mathematicas e astronomicas* (1877–1902) [Ro]. This *Jornal* had the specific aim of ending Portugal's mathematical isolation and enhancing the direct contact with mathematicians from other countries and it reflected the significant increase of mathematical activity by Portuguese mathematicians, as observed in [S]. Although the majority of the authors of papers were Portuguese, it also included contributions from other European mathematicians like Ch. Hermite, M. D'Ocagne, E. Cesaro, G. Loria, or Ch. De la Vallée Poussin.

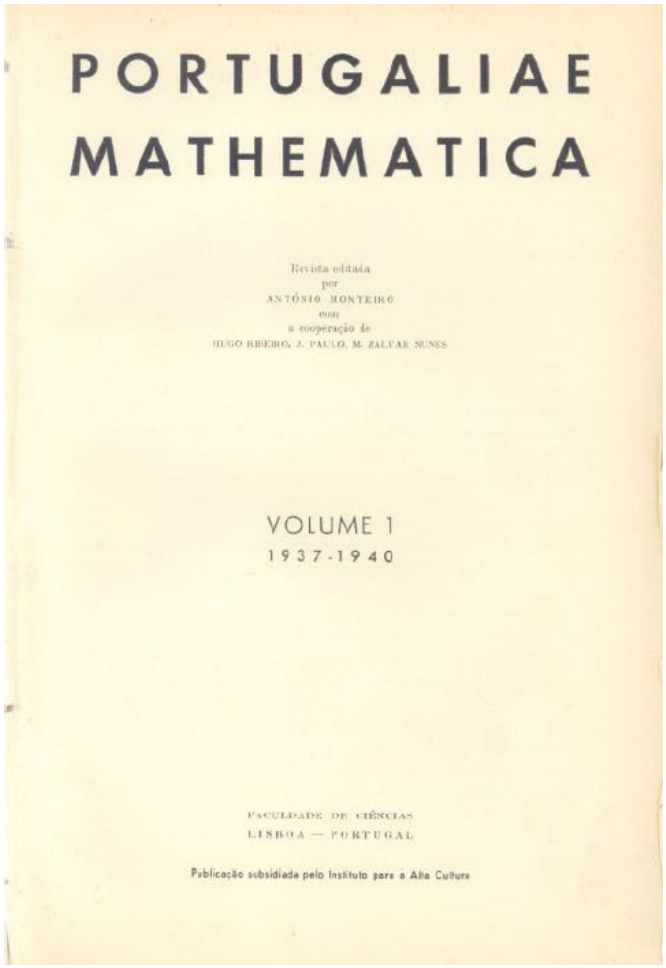
Gomes Teixeira, who became professor of Mathematics in 1883 at the *Academia Politécnica do Porto* and was the first *Reitor* of the University of Porto, from 1911 to 1929, contributed to create the basis of the rich periodicals component of the Library of the Faculty of Sciences of his University through the exchange of his *Jornal*, later called *Anais da Faculdade de Sciencias do Porto*, with other similar scientific journals. In a national survey of the 1930's [M1], the mathematics library in Porto was considered the most complete one in books and journals in the whole country.

A few years later, in 1937, António Aniceto Monteiro (1907–1980), the young forerunner of the mathematical modernism in Portugal, founded in Lisbon the journal *Portugaliae Mathematica*, just one year after having completed a thesis with Maurice Fréchet in Paris. This new research journal was created with the explicit purpose to contribute to the development of mathematical studies in Portugal and to archive all the Portuguese works unpublished or included in national and international journals [Ri1]. This modern version of the Teixeira's *Jornal*, created sixty years earlier, reflected a new mathematical movement in the country and had also the intention to contribute towards the international cooperation in the field, in particular, by initiating a successful exchange of mathematical periodicals.

Due to the poor conditions of the Portuguese mathematical libraries, this was one of the main contributions of the new journal. Indeed, during the initial period of its organization in 1937–1942, with the assistance of Hugo Ribeiro, José da Silva Paulo and M. Zaluar Nunes, Monteiro created in Lisbon the *Portugaliae Mathematica's Library* with the support of the *Instituto para a Alta Cultura* (IAC) [M1]. In 1940 the number of titles obtained by exchange was already of 60 and two years later it almost doubled to 116, being 10 from the USA and USSR each, 9 from Italy, Japan, Poland and Germany, 8 from UK and Romania, 7 from India, 6 from Belgium, etc. Half a century later, in 1990, after the reorganization of the *Portugaliae Mathematica's Library* done in the eighties by the *Centro de Matemática e Aplicações Fundamentais* (CMAF) at the University of Lisbon, that total number of titles in exchange was 143 [PG].

António Monteiro was also the driving force of a modernized professional and autonomous mathematics activity that he describes in 1942 in [M2]: "It is unquestionable that we see today in our country a truly effervescence of activities in the field of mathematical sciences. This assertion is shown by the successive appearance, in the short period of five years, of: 1) *Portugaliae Mathematica*, founded in 1937; 2) *Seminário Matemático de Lisboa* (1938), that changes its name into Semi-

* Centro de Matemática, Aplicações Fundamentais e Investigação Operacional da Faculdade de Ciências da Universidade de Lisboa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DR. ANTÓNIO ANICETO RIBEIRO MONTEIRO
(Desenho de Manoel Mendes)

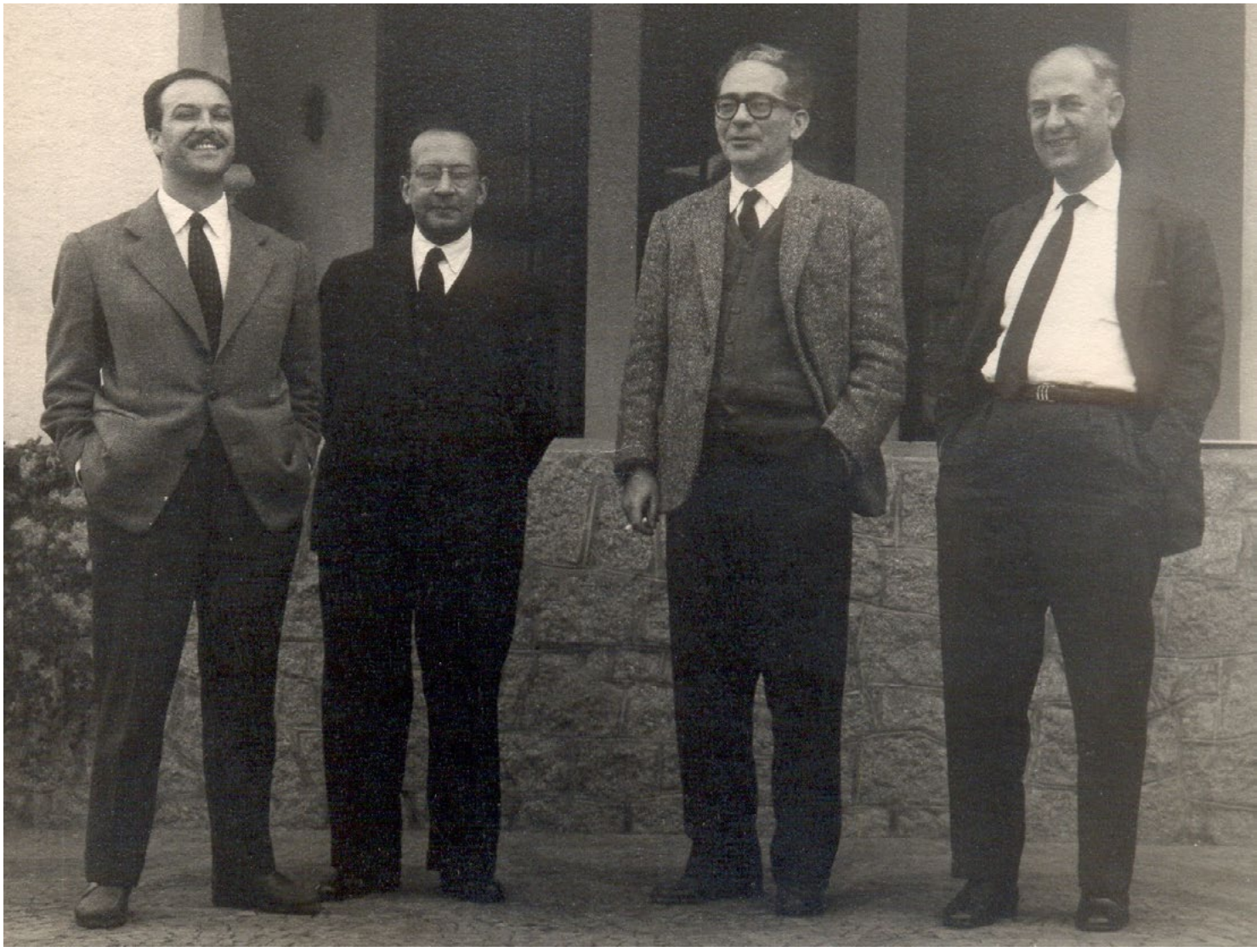
O Diabo, 1-07-1939

nário de Análise Geral in November of 1939; 3) *Centro de Estudos de Matemáticas Aplicadas à Economia*, founded by the 1st group of the Instituto Superior de Ciências Económicas e Financeiras (1938); 4) *Gazeta de Matemática*, January 1939; 5) *Centro de Estudos Matemáticos de Lisboa*, founded by the *Instituto para a Alta Cultura*, in February of 1940; 6) *Sociedade Portuguesa de Matemática*, 12th December 1940, 7) *Centro de Estudos Matemáticos do Porto*, founded also by the *Instituto para a Alta Cultura*, in February of 1942."

Portugaliae Mathematica started the first two volumes with Monteiro's thesis and an interesting blend of articles by young Portuguese researchers, such as Monteiro himself, Ruy Luis Gomes, Hugo Ribeiro, and José Sebastião e Silva, together with the inclusion of a few papers of the established mathematicians J. Vicente Gonçalves (1896–1985) and A. de Mira Fernandes (1884–1958), who supported the new journal by allowing the reprint of his papers from Italian journals. In those first volumes, the small group active around Monteiro in the *Centro de Estudos Matemáticos de Lisboa anexo à Faculdade de Ciências*, in the period 1940–1942 published several original contributions, in particular, solving and extending some questions proposed in the Fréchet's 1928 important book *Les espaces abstraits et leur théorie consideré comme introduction à l'Analyse générale*.

Fifty years later, Hugo Ribeiro wrote in [Ri2]: "I worked frequently with Monteiro, Zaluar Nunes and Silva Paulo in some old office room of the School of Science at the University of Lisboa. All of us did, of course, our best to help but I must emphasize, for it was and is my understanding, that Monteiro, alone, started the journal and took all crucial initiatives."

In 1942, the third and last volume of *Portugaliae* sponsored by the IAC shows an increasing international collaboration. It includes a long paper by John von Neumann, and, among others, also papers by M. Fréchet and R. Cacciopoli. In spite of the international recognition of the journal, the subsequence volumes of *Portugaliae Mathematica*, starting with the fourth volume corresponding to the years 1943/1945 and containing articles by G. Ascoli and H. Hopf, were published without any financial support from the state, a situation that continued until the reorganization in the end of the seventies already under the new democratic regime. The financial support came from the *Junta de Investigação Matemática* (JIM) and the Portuguese Mathematical Society (SPM). The JIM was a remarkable private association created

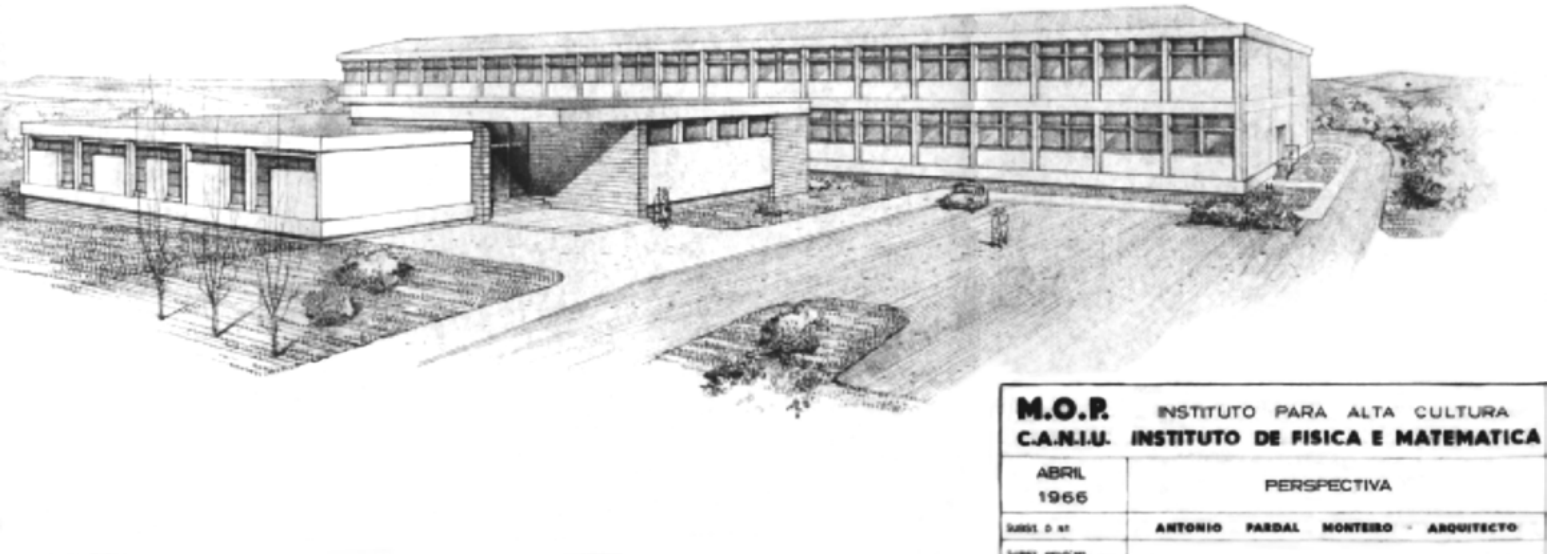


A. Pereira Gomes, Ruy Luis Gomes, António Monteiro and M. Zaluar Nunes, at the 2nd Colóquio Brasileiro de Matemática, in 1959, São Paulo, Brazil, were the representatives of the resistance of a generation.

in 1943 by the initiative of Ruy Luis Gomes, professor at the Faculty of Sciences of Porto, Mira Fernandes and António Monteiro with the purpose of promoting mathematical research and sponsoring publications, fellowships and international missions of Portuguese mathematicians [Ro].

In spite of the anti-intellectual offensive of the dictatorial regime in Portugal of 1947, that expelled from the University and the country several scientists and professors, creating an oppressive and retrograde cultural atmosphere and, in particular, would affect in a dramatic way the development of mathematical sciences in the country for the next three decades, *Portugaliae Mathematica* had survived. Under the direction of Zaluar Nunes, who became in fact the journal director from 1945 until 1967, replacing António Monteiro after his departure to Rio de Janeiro due to political and economical reasons, the list of contributors to the twenty five volumes of *Portugaliae* contains the names of all the relevant Portuguese mathematicians active in those two decades, some with several articles, like José Sebastião e Silva (1914-1972), who published in volume 9 (1950) his thesis presented at the Faculty of Sciences of Lisbon in 1948 [SS]. Within the long list of international collaborations, we may find not only the names of distinguished mathematicians, such as the already mentioned M. Fréchet, J. von Neumann, R. Caccioppoli, G. Ascoli and H. Hopf, but also W. Sierpinsky, L. Nachbin, L. de Broglie, P. Erdös, I. Kaplansky, M. Peixoto, J. Dieudonné, G. Köthe, C. Foias and J.-L. Lions. The majority of the editorial committee, that included also Ruy Luis Gomes, was in that period in exile, but shared Monteiro's vision of transforming *Portugaliae Mathematica* into a "truly organ of Portuguese mathematical culture". In fact, "History has seen this journal also as a remarkable example of intellectual resistance during the oppressive environment of indifference and repression of the dictatorship" [Ro].

From 1967 until the reconstruction of the the *Sociedade Portuguesa de Matemática* (SPM) in 1977, *Portugaliae Math-*



The architect's vision of the Instituto de Física e Matemática (1971-1975) in Lisbon.

ematica continued in Lisboa, published by the *Tipografia de Matemática*, and kept its role of an internationally accepted mathematical journal with a relevant exchange with several other mathematical journals. It was necessary the moral donation by António Monteiro of the title of *Portugaliae Mathematica* to the SPM and its official registration by the Society in December 1978 to establish the normal conditions for the recover of its international credibility [PG], under the responsibility of a new Editorial Committee directed by Alfredo Pereira Gomes.

The regularization of the periodicity of its publication, from volume 36 onwards took some years. That volume, corresponding to the year 1977, with the exception of the first issue, was published under the new Editorial Committee only in October 1980, with the financial support of the Calouste Gulbenkian Foundation. The *Portugaliae Mathematica's Library* was then re-established with a renewed list of exchanges with similar journals, following a protocol of 1983 with the *Centro de Matemática e Aplicações Fundamentais* (CMAF), the research mathematical centre originated in 1975 with the support of the INIC, the National Institute for Scientific Research that had replaced the IAC, resuming the old tradition of the *Centro de Estudos Matemáticos de Lisboa*, which was active from 1952 until 1972 under the direction of J. Sebastião e Silva. This agreement of mutual support of mathematical libraries was reconfirmed in 1991 with the CMAF, and, after the extinction of INIC at the end of 1992, continued to be supported by the *Complexo Interdisciplinar* at the University of Lisboa, in the new Library of the renewed building of the former *Instituto de Física e Matemática* of the IAC, where the journals were available to the Portuguese researchers during a period of more than 22 years.

Under the initiative of A. Pereira Gomes, that directed Portugaliae during 1978-1995, with the help of the new Editorial Committee, the volume 39, corresponding to the year 1980, appeared a few years later, again with support from the Calouste Gulbenkian Foundation, and was published in homage to the memory of its founder, just deceased at the age of 73 in Bahia Blanca, Argentina, where he lived for many years. This volume, in addition of the pages dedicated by his friends and colleagues to aspects of his life, work and personality, includes 24 original papers in homage to Monteiro and integrates also his long memoir [M3], which had been written during Monteiro's stay in Lisbon at the CMAF in 1977–1978, as visiting researcher, and was awarded with the 1978 Gulbenkian Science prize.

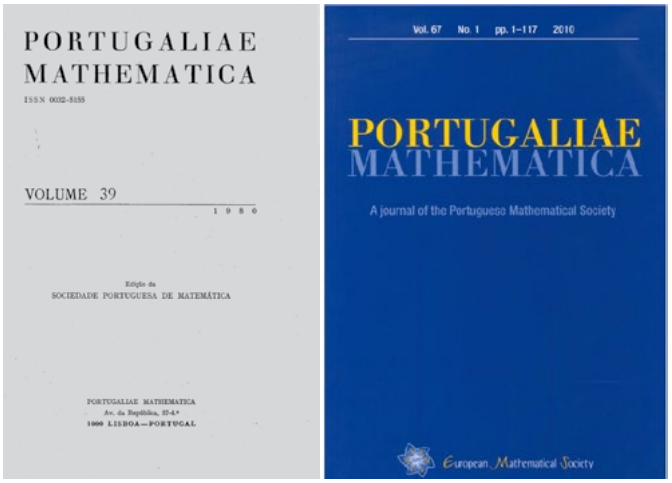
Also in the beginning of the eighties, during the normalization process of publication, Portugaliae dedicated a special volume, the 41st corresponding to 1982, to José Sebastião e Silva, the most significant Portuguese mathematician of the XX century who published nine papers in this journal from 1940 until 1960. This volume collected 42 papers presented at the international Symposium on Functional Analysis and Differential Equations held in Lisbon, organized by the *Sociedade Portuguesa de Matemática*, on the occasion of the tenth anniversary of the decease of the distinguished Portuguese analyst, and reflected the new atmosphere and internationalization of the renewed mathematical community at the dawn of the Portugal integration in the European Union.

With its fiftieth anniversary, the publication of volume 47 in 1987 corresponded to a stabilized editorial situation,

A view of the research Library of the Complexo Interdisciplinar of the University of Lisbon, where the Portugaliae Mathematica's Library was available from 1993 until 2015.

which then had recovered its international acceptance and had attracted again the collaboration of Portuguese mathematicians to the journal. With the financial support of INIC, that volume also initiated a new era of its publication, since for the first time it was electronically composed in TeX. From 1996 until 2006 it was partially supported by CMAF and *Centro de Álgebra*, as well as by the other Mathematics research units of the University of Lisbon, that provided the remaining financial funds for *Portugaliae Mathematica*, complementing its subscriptions and a support from the *Fundação para a Ciência e a Tecnologia* (FCT), the continuation of the INIC after 1993.

During the World Mathematical Year (WMY2000) the Editorial Committee of *Portugaliae Mathematica* was composed by six members from the Universities of Lisbon and Coimbra, under the direction of João Paulo Dias, a team in charge from 1996 to 2006. The Editorial Board of 31 members was composed by 15 Portuguese mathematicians, including two living abroad, and among the 16 other foreign members, being three of them North American, one Brazilian and the other 12 Europeans. Currently, the director is Luis Nunes Vicente, from the University of Coimbra.



The electronic edition of *Portugaliae Mathematica* of the first 50 volumes, from 1937 until 1993, were integrated in the digital *Biblioteca Nacional de Portugal* [W1]. The volumes 51 (1994) up to 63 (2006) are also in Open Access and are integrated in The Electronic Library of Mathematics (EMIS) [W2].

Starting with volume 64 (2007), with the support of four research units associated with the *Faculdade de Ciên-*

Fernando Pestana da Costa, President of the Portuguese Mathematical Society (SPM), with José Artur Martinho Simões, Director of the Faculty of Sciences of the University of Lisbon (FCUL), after the signature of Agreement on the Portugaliae Mathematica's Library the 11th November 2015

cias da Universidade de Lisboa (FCUL) and the FCT, *Portugaliae Mathematica* is being published by the EMS-Publishing House [W3], under an agreement of the SPM with the European Mathematical Society (EMS).

In the spring of 2015, with the transfer of the four research units of Mathematics affiliated with the FCUL from the *Complexo Interdisciplinar* of the University of Lisbon, together with their libraries, to the building of the Mathematics Department on the campus of the FCUL, the *Portugaliae Mathematica's Library*, that currently keeps an exchange of about one hundred titles with similar journals, was also transferred to the Library of the FCUL, where is maintained and made available to the scientific community under a renewed agreement with the SPM.

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[W1] http://purl.pt/index/pmath/PT/index.html

[W2] http://www.emis.de/journals/PM/

[W3] http://www.ems-ph.org/journals/journal.php?jrn=pm

Geometric Aspects of Modern Dynamics

by Alberto Pinto, Helena Reis, and Renato Soeiro

The conference *Geometric Aspects of Modern Dynamics* was held at the Department of Mathematics of the Faculty of Sciences of the University of Porto from 11 through 15 January 2016. The event was partially supported by the following institutions: Centro de Matemática da Universidade do Porto (CMUP), Centro Internacional de Matemática (CIM), Fundação Luso-Americana para o Desenvolvimento (FLAD), Fundação para a Ciência e a Tecnologia (FCT), Institut de Mathématiques de Toulouse (IMT) and Reitoria da Universidade do Porto (UP).

The conference brought together more than 70 experts in dynamical systems coming from various countries and including several field leaders for a program consisting of 24 talks. The scientific and organizing committees for the conference consisted of M. Abate (*University of Pisa*, Italy), A. Glutsyuk (*ENS-Lyon*, France and *HSE-Moscow*, Russia), M. Lyubich (*Stony Brook*, US), J. Raissy (*University of Toulouse*, France), J. Rebelo (*University of Toulouse*, France) and H. Reis (*University of Porto*, Portugal).

Broadly speaking, dynamical systems has to do with determining the asymptotic behavior of systems that *evolve with time*. The beginning of the theory is generally ascribed to Poincaré's investigations of the qualitative behavior of solutions of differential equations. The point of view of dynamics, however, was gradually enlarged to encompass the iterations of a diffeomorphism/endomorphism, more gen-