

Proceedings of the
15th International Workshop
on Real and Complex Singularities

São Carlos, Brazil, 22–28 July, 2018

Editors:

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Introduction

The International Workshop on Real and Complex Singularities is organized by the Singularities Group of the Institute of Mathematical and Computer Sciences (ICMC) of the University of São Paulo (USP), campus São Carlos. It is one of the key events for people working in singularity theory, algebraic geometry, bifurcation theory and related areas. It brings together world experts and young researchers to report on their recent achievements, to exchange ideas and to address trends of research in a highly stimulating environment. The Workshop is a bi-annual event which started in 1990.

The 15th edition of the International Workshop on Real and Complex Singularities took place from July 22 to 28, 2018 at the ICMC-USP, São Carlos. It was dedicated in honor of Maria Ruas and Terence Gaffney's 70th birthdays and Marcelo Saia's 60th birthday. As in previous editions, the Workshop aimed at the interaction between undergraduate and graduate students, young researchers and world experts of Singularities and other related areas, and the dissemination of scientific works. The activities of the Workshop consisted of lectures, short courses, communications and posters on the most diverse fronts, within the Theory of Singularities. The program consisted of 20 plenary sessions, 6 among them were special plenary sessions, where the speakers presented papers recently developed in collaboration with professors Terence Gaffney, Maria Ruas and Marcelo Saia, honored in this edition, 48 ordinary sessions, and 34 posters.

We consider that the Workshop successfully achieved its goal. The quality of the lectures presented was strongly appreciated by the participants; the themes of the offered short courses and the effective participation of graduate students and young researchers were again highlights of this event.

It had a significant number of participants. The 145 participants came from several Brazilian and foreign institutions, for example, from the USA, Japan, Spain, France, England, Canada, Peru, Mexico, Poland, Germany. We thank the speakers and the participants whose presence was the real success of the Workshop.

The organization of the Workshop was possible thanks to the help of many people and institutions. The members of the Scientific Committee: Enrique Artal Bartolo, Jean-Paul Brasselet, Alexandre César Gurgel Fernandes, Marcelo Escudeiro Hernandez, Zbigniew Jelonek, Ursula Ludwig, Takashi Nishimura, Regilene Delazari dos Santos Oliveira, Maria Aparecida Soares Ruas, José Seade, Mihai Tibăr. The members of the Organizing Committee: Grazielle Feliciani Barbosa, Nivaldo de Góes Grulha Junior, Raimundo Nonato Araújo dos Santos, Thaís Maria Dalbello, Aurélio Menegon Neto and Miriam da Silva Pereira. The Workshop was funded by Institutions from Brasil: FAPESP, CNPq and INCTMat.

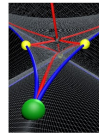
The articles in the present volume were submitted by participants of the 15th International Workshop on Real and Complex Singularities. They show a wide spectrum of topics in Singularity Theory. We thank all the contributors for their high quality research articles.

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Figure 1: Maria Ruas and Terence Gaffney 70th birthdays and Marcelo Saia 60th birthday.

A SATELLITE OF



**15th INTERNATIONAL WORKSHOP
ON REAL AND COMPLEX SINGULARITIES**
22 - 28 July 2018, ICMC-USP, São Carlos - SP, Brazil



List of Participants

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- Aldicio José Miranda - (Universidade Federal De Uberlândia)
- Alex Carlucci Rezende - (UFSM)
- Alex Paulo Francisco - (ICMC-USP)
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- Ananyo Dan - (Bcam-Basque Centre For Applied Mathematics)
- András Némethi - (Renyi Institute Of Mathematics)
- Andrew Allan Du Plessis - (Aarhus)
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- Irma Pallarés Torres - (BCAM)
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