PREFACE

AstroRob2023 – A Continuing Tradition of Innovation and Collaboration

Fifteen years have passed since the inaugural Workshop on Robotic Autonomous Observatories was held in Málaga, Spain. In that time, the field of robotic astronomy has evolved at an unprecedented pace, marked by the rapid growth in the number and sophistication of autonomous astronomical facilities worldwide. As we approach the publication of the AstroRob2023 Proceedings—featured in a special issue of the Revista Mexicana de Astronomía y Astrofísica Conference Series in early 2025—it is fitting to reflect on the remarkable advancements and the workshop's vital role in fostering innovation and collaboration within this dynamic field.

The AstroRob series has become a cornerstone international forum, drawing researchers from across the globe to share the latest technological and scientific developments. The workshop, held from October 16th to 20th, 2023, at the Hotel Occidental Torremolinos Playa in Málaga, Spain, was no exception. Situated along the picturesque Costa del Sol, the venue provided an inspiring backdrop for a week of insightful presentations, engaging discussions, and invaluable networking opportunities.

The 2023 workshop arrived at a key moment for the astronomical community. The advent of new gravitational wave detectors in recent years and the anticipated discovery of electromagnetic counterparts have underscored the urgent need for highly autonomous and networked observatories. These facilities are essential not only for gravitational wave astronomy but also for a wide range of space research. From detecting fireballs and minor planets to monitoring variable stars and active galactic nuclei, robotic observatories are at the forefront of modern astronomy. Their contributions to the detection and monitoring of supernovae, gamma-ray bursts, and neutrino counterparts further highlight their importance in advancing our understanding of the universe.

Beyond traditional astrophysics, robotic observatories are increasingly vital in areas like space debris surveillance and tracking, where their ability to monitor and predict the movements of debris is critical for ensuring the safety of current and future space missions. The workshop also emphasized the educational potential of robotic observatories, showcasing how they inspire and engage the next generation of scientists.

The workshop's sessions reflected the field's breadth and depth, with topics ranging from hardware and software development to real-time data analysis, wide-field imaging, and follow-up observations. Discussions highlighted the integration of these technologies into global networks of observatories, enabling unprecedented coordination and data sharing, especially for transient event responses. The workshop also addressed challenges related to data archiving, quality control, and the development of advanced control systems for telescopes and observatories.

In addition to technical and scientific sessions, the workshop served as a platform for discussions on public outreach, citizen science, and future strategies to drive Robotic Astronomy forward. These initiatives are crucial for maintaining public interest and support for astronomical research.

We are grateful for co-organizing the workshop to the Instituto de Astrofísica de Andalucía (IAA-CSIC) and the Department of System Engineering and Automatics at Universidad de Málaga (UMA). We extend our heartfelt thanks to the Scientific Organizing Committee (SOC)—I. Andreoni, M. D. Caballero-García, A. J.

PREFACE

Castro-Tirado (chair), M. Gritsevich, S. Guziy, L. Hanlon, D. Hiriart, R. Hudec, P. Kubánek, D. Martínez-Delgado, F. F. Özeren, S. B. Pandey, C. Pérez del Pulgar, and B.-B. Zhang—for curating an exceptional scientific program. We are equally grateful to the Local Organizing Committee (LOC)—led by A. J. Reina (LOC chair), with M. E. Alcoholado-Feltström (LOC secretary), I. M. Carrasco-García, A. Castellón, S. Castillo, E. Fernández-García, Y.-D. Hu, M. Carmen López-Casado, I. Pérez-García, R. Sánchez-Ramírez, and S. Wu—for ensuring a flawlessly executed event.

This sixth workshop marked a significant milestone, with 80 registered participants representing 22 nationalities—a remarkable increase in both participation and internationalization since the inaugural event in 2009. The tradition of combining rigorous scientific engagement with cultural experiences continued, highlighted by the cherished midnight swim following the conference dinner—a hallmark of AstroRob workshops for the past 15 years.

We especially thank Irina Guziy for designing the vibrant workshop announcement poster and María Eva Alcoholado-Feltström (assisted by Javier Alberto Castro Alcoholado) for her outstanding efforts as workshop secretary, ensuring the event's smooth organization.

Last but not least, we express our heartfelt gratitude to the referees for their dedicated reviews and to the team behind the Revista Mexicana de Astronomía y Astrofísica for their meticulous editorial work in preparing and publishing this issue. As the AstroRob2023 Proceedings are finalized, we are reminded of the critical role these gatherings play in advancing the field. The contributions presented at this workshop not only capture the current state of robotic astronomy but also serve as a foundation for future breakthroughs.

The continued success of the AstroRob series is a testament to the dedication, creativity, and collaboration of the global community of researchers driving innovation in autonomous astronomical observations. We look forward to the insights and advancements that will emerge from these proceedings and the ongoing growth of this exciting field. May the AstroRob series continue to stand as a pillar of collaboration, driving both technological and scientific progress in the years to come.

Maria Gritsevich, Alberto J. Castro-Tirado, Petr Kubánek, Shashi B. Pandey, and David Hiriart
Helsinki, Málaga, Praha, Nainital, and Ensenada
Editors of the proceedings