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The Multimessenger Chakra of Blazar Jets

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COVER ILLUSTRATION:

Artistic impression of Hindu lord Vishnu holding an accretion disk with a jet. In Hindu sculptures in Nepal and India, the accretion disk pictorially resembles lord Vishnu's Sudarshan Chakra, conceived as a deity of destruction.

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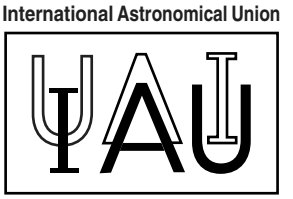

THE MULTIMESSENGER CHAKRA OF BLAZAR JETS

PROCEEDINGS OF THE 375th SYMPOSIUM OF THE INTERNATIONAL ASTRONOMICAL UNION KATHMANDU, NEPAL 5–9 DECEMBER, 2022

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Preface

This special volume includes contributions from the IAU 375 symposium "The multimessenger chakra of blazar jets" that took place in Kathmandu Nepal during 5–9 December 2022 and included 91 participants from 25 countries across the world. The symposium lasted for 5 days covering all aspects of blazar science. The key science themes included multiwavelength/multimessenger theory and observations, particle acceleration mechanisms, jet structure, formation, composition and acceleration, multiwavelength polarization, as well as future experiments. The chapters of this volume have been organized to reflect the topics covered in each of the days.

Blazars are among the most intriguing and consistently bright objects in the observable Universe. They are the most extreme active galactic nuclei with powerful relativistic jets extending out to kpc from the central engine. Understanding how blazars form and shine has been a cumbersome endeavor since their discovery in the 1960s. Several fundamental questions regarding their intrinsic properties and the properties of the supermassive black holes in their centers are open to this day. 2020s mark the beginning of a new era, an era of large scale surveys, multimesseger astrophysics, high-energy polarization, and extreme angular resolution, setting the ideal stage to study astrophysical jets. The symposium had three goals. First, to bring together experts from all different aspects of the blazar community and facilitate the building of new collaborative efforts just in time to take advantage of the wealth of new incoming data that will help finally provide answers to long standing questions. Second, as the first IAU symposium in Nepal, to establish collaborative bridges between scientists from Nepal and scientists from around the World. Third, to support ongoing local efforts to promote astrophysics, and astrophysical research in Nepal.

To achieve a more interactive meeting and bridge the senior-junior scientist gap we organized mini workshops during lunch breaks on different topics related to the scientific theme of the day. We also organized "junior-senior lunches" by randomly assigning senior and junior scientists to different lunch groups giving the opportunity to break the ice between participants and allow junior scientist to gain the most out of the meeting.

Finally, throughout the symposium, we organized a vivid and diverse outreach program led by the Nepal Astronomical Society (NASO). The program included visits to schools by the symposium's participants, on-site training seminars on teaching astronomy for high-school teachers, and public talks. We also coordinated with RAD@home India and organized training sessions for citizen science related to radio galaxies and blazars.

Ioannis Liodakis
On behalf of the organizers

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Group photograph of the Symposium's participants at the venue.

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Group photograph of the Symposium's participants during the excursion at the UNESCO's world heritage site of Bhaktapur.

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