

Supermassive Black Holes, Feedback and Galaxy Evolution Annual Report: 2019

IAU Symposium 359



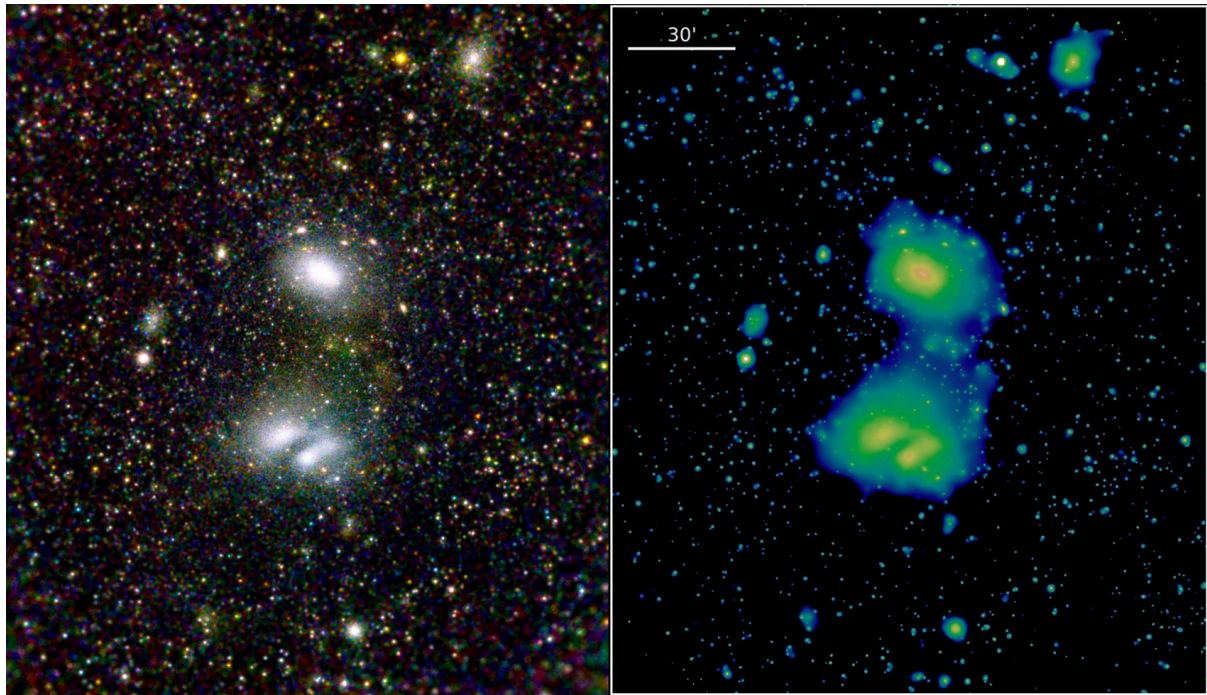
In May 2019, we received the news that our proposed IAU Symposium **359 – *Galaxy Evolution and Feedback across Different Environments*** was approved. The organization of this Symposium was one of the main activities of our Commission in the second semester of 2019, with myself as chair and William Forman and Roderik Overzier as co-chairs.

The result was that we attracted more than 180 participants to the town of Bento Gonçalves, in the south of Brazil, from March 2 to 6, 2020. We had participation from 23 countries: Brazil, Argentina, Australia, Canada, Chile, Denmark, Finland, France, Germany, India, Italy, Japan, South Korea, Mexico, Netherlands, Norway, Poland, Portugal, Spain, South Africa, Switzerland, United Kingdom and United States.

We also had the outstanding participation of approximately 80 students (mostly graduate, but also a number of undergraduate), with the largest number from Brazil. The students participated not only in the Symposium but also in the Outreach and Education activities

during the Symposium. These activities included contributions from invited speakers, talks, demonstrations and night-time observations that attracted more than 2000 people, among them high school students and the general public. The enthusiasm of the attendees was remarkable with question periods extending an hour beyond the allotted time and young children being photographed, by their parents and friends, with the speakers.

Important recent initiatives:



Above: One of the first images of the e-Rosita telescopes, launched in July 2019, showing two interacting galaxy clusters at 800 million light years.

Recent initiatives ensure that the impact of Commission X1 will continue throughout the decade of the 2020s. While JWST is not yet launched, other space and ground based initiatives are underway. The Spectrum-Roentgen-Gamma mission was successfully launched on 13 July 2019. Following an initial performance verification phase, it has begun its prime survey mission - eight complete surveys of the entire sky, one every six months, for the next 4 years. Based on the performance verification observations, in a survey of about 1/300 of the entire sky to the depth of the final survey, eRosita detected more than 15,000 AGN and more than 400 galaxy clusters. This verifies the pre-launch predictions that the survey will detect of order 100,000 galaxy clusters and more than four million AGN.

Radio surveys in both the southern and northern hemispheres are well underway. In the radio regime, the LOFAR, GMRT, ASKAP-EMU surveys are providing remarkable insights into high energy processes and feedback by discovering all manner of new types of objects requiring detailed multi-wavelength followup. With the already operating facilities, and more to come, the exploration of “Supermassive Black Holes, Feedback and Galaxy Evolution” already is assured of exciting advances.

Conferences on the topics of Commission X1:

The interest in the topic of Commission X1 is shown by the numerous topical conferences. In just 2019, conferences devoted to the topics of interest to Commission X1 included:

Astrophysics of hot plasma in extended X-ray sources: June 12-14, Madrid, Spain

Exploring the Energetic Universe: June 17-21, Artana, Kazakhstan

Supermassive Black Holes: environment and evolution: June 19-22, Corfu, Greece

Feedback and its role in galaxy formation: June 25-29, Spetses, Greece

High energy phenomena in relativistic outflows: July 9-12, Barcelona, Spain

A centenary of astrophysical jets: Observation, Theory, and Future Prospects: July 23-26, Manchester, UK

Quasars in crisis: August 5-9, Edinburgh, UK

Active Galaxies and Quasars: September 9-10, Byurakan, Armenia

The 3C Extragalactic Radio Sky: Legacy of the Third Cambridge Catalogue: September 16-20, Turin, Italy

The Cosmic Baryon Cycle: Impact on Galaxy Evolution: September 19-21, Carlsbad, US

IAU Symposium 356: Nuclear Activity in Galaxies Across Cosmic Time: October 7-11, Addis Ababa, Ethiopia

Cosmic Evolution of Quasars: from the First Light to Local Relics: October 21-25, Beijing, China

Twenty years of science with Chandra: December 3-6, Boston, US

The Origins of Black Hole Mergers and Gravitational Waves: December 16-20, Lorentz Center, NL.

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