Andrea Botteon

Title

The most giant radio structures in the Universe

Abstract

One of the exciting results of the last years concerning the study of the large-scale structure is the discovery of long (3-5 Mpc) bridges of radio emission connecting pairs of interacting clusters. This is the first direct evidence of the existence of particle acceleration and magnetic field amplification mechanisms outside galaxy clusters. Non-thermal components spread over such vast extents probe the dynamics of large-scale structures and the mechanisms of energy dissipation therein. In my talk, I will discuss recent results on radio bridges, showing how their observation represents a step forward in the search of the radio signature of the magnetized cosmic web.

Andrea Botteon

Place and Date of Birth: Vittorio Veneto (TV), Italy | October 02, 1991
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Field of research: Non-thermal phenomena in merging galaxy clusters

Career:
- **Postdoc researcher** | Leiden Observatory - Leiden University, the Netherlands (July 2019 → Current)
- **Postdoc researcher** | University of Bologna & IRA-INAF, Italy (December 2018 → June 2019)

Education:
- **PhD** in Astrophysics | University of Bologna & IRA-INAF, Italy (November 2015 → October 2018)
Thesis: *Shock waves and non-thermal phenomena in merging galaxy clusters* | Supervisors: Dr. G. Brunetti, Prof. D. Dallacasa, Dr. F. Gastaldello
- **Master Degree** in Astrophysics and Cosmology | University of Bologna, Italy (September 2013 → July 2015)
Thesis: *Radio relics and magnetic fields in galaxy clusters* | Supervisors: Dr. G. Brunetti, Prof. D. Dallacasa
- **Bachelor Degree** in Astronomy | University of Bologna, Italy (September 2010 → July 2013)
Thesis: *Synchrotron emission and astrophysical applications* | Supervisor: Prof. D. Dallacasa

Grants and Awards:
- **2019**: Honorable mention at the Livio Gratton prize XIV edition for the best Italian PhD Thesis in Astrophysics in 2017-2018
- **2016**: recipient of the PhD mobility grant "Marco Polo" from the University of Bologna, Italy
- **2015**: recipient of a grant to cover the full duration of the PhD from the University of Bologna, Italy

Publications: **68** accepted referred journal articles (**12** as PI) | **2** conference proceedings (as PI)

Participation at International Conferences: **2** invited talks | **19** contributed talks | **6** posters

Talks: **14** institute seminars and coffee talks at ASTRON, CfA, ESO, IRA-INAF, IASF-INAF, OAS-INAF, Leiden Observatory, MPE, University of Bologna, U.S. Naval Research Laboratory

Observational Proposals: **60** accepted proposals (**9** as PI) at LOFAR, MWA, uGMRT, MeerKAT, JVLA, Chandra, XMM-Newton, NuSTAR

Academic Activity: Co-Supervisor of **3** Master Degree students and **1** Bachelor Degree student

Others Activities:
- **Referee** for A&A, AJ, ApJ, and MNRAS
- **Expert reviewer** for GMRT proposals
- **Expert observer** for the LOFAR Two-meter Sky Survey (LoTSS) (March 2020 → Current)

Collaborations and Working Groups:
- **Member** of EMU (May 2021 → Current)
- **Associate member** of the SKA Extragalactic Continuum Working Group (December 2020 → Current)
- **Junior Member** of the IAU D & J Divisions (June 2020 → Current)
- **Member** of the Athena SWG 1.2 "The astrophysics of galaxy groups and clusters" (January 2019 → Current)
- **Associate member** of the LOFAR-IT Data Working Group (May 2017 → Current)
- **Member** of the LOFAR Surveys Key Science Project (September 2016 → Current)

Organization of Scientific Meetings:
- **LOC member and tutor** during hands-on sessions of "The first Italian LOFAR School" held in Bologna, Italy (11-14/06/2019)
- **Co-Organizer** of the "Thermal-Non-Thermal" meetings to promote the interaction between the personnel working on galaxy clusters and large scale structures in Bologna (September 2018 → June 2019)

Data Reduction and Computing Skills:
- **Radio analysis** of LOFAR, GMRT, VLA observations
- **X-ray analysis** of Chandra, XMM-Newton observations
- **Programming** in Fortran90, Python, and BASH

Press and Media:
- **2021**: The galaxy with a wagging tail | NASA press release | ASTRON press release | INAF press release (in Italian)
- **2020**: A vast "bridge" between galaxy clusters | Science Alert | VICE magazine
- **2020**: The beautiful mess in Abell 2255 | EAS press release | INAF press release (in Italian)
- **2019**: The first data release of the LOFAR Two-meter Sky Survey (LoTSS) | ASTRON press release | INAF press release (in Italian, with interview)
- **2018**: Scala reale (a bassa frequenza) | Le stelle magazine (in Italian)
- **2017**: Fronti freddi, cuori caldi | Le stelle magazine (in Italian)

Languages: Italian (native proficiency), English (professional proficiency)

Date: December 2021