The next frontier of cosmic structure formation simulations: a multi-messenger view of galaxies and their central black holes
Upcoming observational facilities: revolution across the electromagnetic and gravitational wave spectrum

- JWST 2021
- LISA 2034
- Athena 2031+
- SKA 2027
Current state-of-the-art in cosmological simulations
Black hole jets in full cosmological simulations

Cluster MS 0735

Simulated Cluster

Credit: Hubble and Chandra Image: NASA, ESA, CXC, STScI, and B. McNamara (University of Waterloo); Very Large Array Telescope Image: NRAO, and L. Birzan and team (Ohio University).

Credit: Hubble Image (background): NASA, ESA, and B. McNamara (University of Waterloo)

Resolving galaxies and cosmic space between them

WITH MUCH HIGHER RESOLUTION IN COSMIC FILAMENTS LOW METALLICITY STARS FORM FROM (LARGELY) PRIMORDIAL GAS: PREDICTIONS FOR JWST

Black holes in smallest galaxies: a paradigm shift?

Koudmani, Sijacki et al. 2018, 2020, 2022

ATHENA/LYNX SHOULD UNCOVER LARGE POPULATION OF BLACK HOLES IN SMALL GALAXIES
FROM GALAXY TO BLACK HOLE MERGER: FOLLOWING BLACK HOLE INSPIRAL TO MAKE PREDICTIONS FOR LISA

Astrophysics Working Group

Fiacconi, Sijacki & Pringle, 2018
Bourne, Fiacconi, Piotrowska & Sijacki, in prep.
Next frontier in black hole growth and jet simulations: harnessing the power of JWST, Athena, LISA and SKA
Acknowledgements

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- Sijing Shen
- Pawel Biernacki
- Martin Bourne
- Colin DeGraf
- Davide Fiacconi
- Sergio M. Alvarez
- Ricarda Beckmann

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- Francisco Montero
- Tiago Costa
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- Shaoran Hu

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