

research highlights

GALAXY SIMULATIONS

As the EAGLE soars

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The existence of a relation between the contemporaneous growth of black holes and the formation of stars in the galaxies that host them is still hotly debated. Stuart McAlpine and collaborators used the Evolution and Assembly of GaLaxies and their Environments (EAGLE) simulations to address this question.

EAGLE is a suite of cosmological hydrodynamical simulations that allows the study of the formation and evolution of galaxies throughout cosmic history. By contrasting the time-resolved star formation and black hole accretion rates of simulated galaxies, the authors find no appreciable relation. In contrast, by considering the integrated accretion rates — when convolved with typical selection functions of observational studies — either a flat or a linear relation is found.

This result underscores the limitations of observational studies that rely on time-averaged estimates of galactic growth. Consequently, observers should re-evaluate their approach in constraining the putative feedback from stars and accreting black holes. Higher resolution simulations also need to investigate how the prescriptions for physics below the mass/scale resolution of a simulation may be affecting these results.

Marios Karouzos