

The role of massive elliptical galaxies on the CMB

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Elliptical galaxies formed very rapidly, with the more massive ones forming faster, on a timescale shorter than a Gyr. The high metallicities of these galaxies imply them to have had significantly top-heavy galaxy-wide stellar initial mass functions. In other words, the synthesis of the heavy elements on such a short time scale in these galaxies implies them to have been 10000 times brighter than today. Given the region of space needed to have formed a single galaxy and their present-day separations, their formation occurred at a redshift near 17, in agreement with current JWST observations. Since star formation produces dust, the thermalised dust radiation from these galaxies is calculated to have been at least 1.4 per cent, and probably all, of the observed CMB photon energy. The implications of this finding, which merely rests on well observed properties and well understood physical laws, for contemporary cosmological theory is catastrophic, implying the need of an entirely novel cosmology to be developed. This work has been done in collaboration with Eda Gjergo from Nanjing University.

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