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Hot ISM in early-type galaxies with stellar and AGN feedback: X-ray diagnostics of the origin and evolution of the hot gas

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A hot plasma is the dominant phase of the ISM of early-type galaxies. Its origin can reside in stellar mass losses, residual gas from the formation epoch, and accretion from outside. Its evolution is linked to the dynamical structure of the host galaxy, to the supernova and AGN feedback heating, and to the (late-epoch) star formation. Observations with XMM-Newton and Chandra have now accumulated a detailed view of the hot gas properties in the local universe. We present two-dimensional, grid-type hydrodynamical simulations, of parsec-scale central resolution, of the hot gas evolution. The simulations include stellar feedback, at the rate predicted by stellar evolution, star formation, and a physically self-consistent treatment of the mechanical (from winds) and radiative AGN feedback; several chemical species, originating in AGB stars and supernovae, have also recently been added, to track the metal enrichment and transportation throughout the galaxy. We will illustrate the X-ray properties of the models and the comparison with those observed in the local universe, focussing on those that proved to be diagnostic of the origin and evolution of the hot gas.

Topic

Hot and diffuse baryons

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