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On the growth of diffuse light from simulations of galaxy clusters

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The diffuse light is a pervasive feature of groups and clusters consisting of an extended low-surface-brightness component that permeates the intergalactic medium of these large galaxy associations. It is formed by stars stripped from their host galaxies or created in-situ during disruptive interactions experienced by members of these galaxy systems, primarily in the course of the gravitational collapse that precedes their formation. It is often found concentrated around the central, most luminous object.
Our aim in this work is to make use of controlled numerical simulations of pre-virialized clusters to study the formation of the diffuse intracluster light (ICL) and investigate its potential to describe the assembly history of such systems of galaxies.
We are currently using our simulations to track the growth of the ICL over cosmic time, tracing its evolution across clusters spanning a range of masses and galaxy memberships. I will present our first results, where we analyzed the relationship of ICL formation with the mass and size of the brightest cluster galaxy and with the total stellar mass of the system.

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