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The intracluster light fraction across redshift and cluster environment

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The intracluster light (ICL) is an important tracer of galaxy cluster assembly, comprising a significant fraction of the total luminous mass of galaxy clusters, and being formed primarily due to galaxy interactions and mergers. Up to now, only small samples of clusters have been studied due to the ICL's very low surface brightness and the challenges involved in carrying out measurements on a large scale. Using a novel machine learning method, we have measured the ICL fraction in the current largest sample of 176 galaxy groups and clusters using images from the Hyper Suprime-Cam Subaru Strategic Program. In this talk, I will present the results of our analysis of this large sample, studying observational trends in redshift, halo mass, and cluster dynamical state. I will highlight the importance of accounting for observational effects when drawing our conclusions, and discuss what these trends reveal about the formation and evolution of the ICL and the galaxies within.

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