Institute of Space Sciences

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Search for Galaxy Clusters in Formation in the Distant Universe

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Within the framework of the hierarchical growth of large-scale structures in the universe, mass is assembled inhomogeneously along walls and filaments which forms a "cosmic web", galaxy clusters are formed at the intersections of such filaments. Galaxy protoclusters (galaxy clusters in formation) are expected to contribute significantly to the star-formation rate density in the distant universe, thus understanding how clusters assembled their mass in the early universe is of critical importance. Both the the Euclid deep and wide surveys , together with the exquisite ground-based optical/imaging datasets, offer a unique opportunity to search for protoclusters in a systematic way and make a big leap forward in this research field. Several tools, calibrated on Euclid-like simulations, have been developed and tailored to find these structures in the Euclid datasets, . I will give an overview of the current status of this work package (WP11 within SWG Cluster of Galaxies) within Euclid and give an outline what is planned to be done with the Euclid Q1 and DR1 datasets.

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