FIRST/PLANCK synergies on clusters of galaxies

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The Early Compact Source Catalog produced from the first 6 months of the PLANCK mission will contain thousands of clusters of galaxies identified from their Sunyaev Zel'dovich imprint on the Cosmic Microwave Background. Among them, about one half will be previously unknown very distant clusters, $z > 0.2$, spatially unresolved (the exact proportion depending on the actual geometry of the Universe). An immediate follow-up of a subset of these clusters with the FIRST bolometric cameras (SPIRE) will be highly profitable and has to be prepared in advance. With two pointings of the telescope and a short integration time (a few minutes) we will be able to cover the area of the PLANCK beam for each cluster with a sensitivity better than the confusion limit imposed by the field infrared galaxies. This will allow to : 1/ identify the field IR galaxies to improve the S.Z. / dust separation in the cluster direction and allow the determination of the cluster physical parameters (T_e, V_p, M_{tot}, baryon fraction), 2/ identity and study the star formation within the cluster, 3/ Spatially resolve the S.Z. profile of the cluster. We will present detailed simulations of FIRST and PLANCK observations of clusters of galaxies, pointing out the unique science that will emerge from this synergy.