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Comparison of X-ray Selected Clusters of Galaxies with SZ Selected Clusters

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We used a flux-limited X-ray sample of 80 clusters of galaxies at $z < 0.22$, along with a sample of 147 clusters with $z < 0.35$ from the Planck Early Sunyaev-Zeldovich catalog of 163 clusters to measure and compare the fraction of cool-core clusters in these two samples. We found that the X-ray selected cluster sample has a significantly larger percentage of cool-core clusters ($\sim 65\%$) compared to the Planck sample (Santos et al. 2017 ApJ 843:76). We also used the Planck cluster sample to compare their cluster properties with those derived from a sample of the 100 highest X-ray flux clusters (Santos et al 2021, ApJ 914, 58). We find significant differences in both the distribution of cluster redshift and the distribution of total cluster mass between the Planck SZ sample and the X-ray cluster sample, with the SZ sample showing a larger percentage of higher mass and higher redshift clusters, compared to the X-ray cluster sample. We also used X-ray observations to determine cluster masses and found good agreement between the X-ray and SZ determinations.