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Planck intermediate results: VI. The dynamical structure of PLCKG214.6+37.0, a Planck discovered triple system of galaxy clusters

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Abstract

The survey of galaxy clusters performed by Planck through the Sunyaev-Zeldovich effect has already discovered many interesting objects, thanks to its full sky coverage. One of the SZ candidates detected inthe early months of the mission near to the signal-to-noise threshold, PLCKG214.6+37.0, was later revealed by XMM-Newton to be a triple system of galaxy clusters. We present the results from a deep XMM-Newton re-observation of PLCKG214.6+37.0, part of a multi-wavelength programme to investigate Planck discovered superclusters. The characterisation of the physical properties of the three components has allowed us to build a template model to extract the total SZ signal of this system with Planck data. We have partly reconciled the discrepancy between the expected SZ signal derived from X-rays and the observed one, which are now consistent within 1.2σ. We measured the redshift of the three components with the iron lines in the X-ray spectrum, and confirm that the three clumps are likely part of the same supercluster structure. The analysis of the dynamical state of the three components, as well as the absence of detectable excess X-ray emission, suggests that we are witnessing the formation of a massive cluster at an early phase of interaction. © ESO, 2013.

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Keywords

Galaxies: clusters: general, Galaxies: clusters: individual: PLCKG214.6+37.0, Large-scale structure of Universe