

T15a XMM-Newton view of a very faint cluster of galaxies: Abell 194

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The study of poor and faint clusters of galaxies are somewhat difficult since they are not strong X-ray emitters. On the other hand, they are very attractive and ideal laboratories to study X-ray point sources, since they contain large number of galaxies all at the same redshift. Normally the sources are buried into the strong extend emission of ICM. The temperature distribution in ICM and the global X-ray properties of the point source population in Abell 194 is investigated, as observed by XMM-Newton. A194 ($z=0.018$) is a very faint cluster of richness class 0, known as “linear” cluster since the brightest member galaxies are aligned in the direction of north-east to south-west. A194 has also a strong radio emission. X-ray morphology of the cluster is irregular, with no clear peak and slight extension toward NE-SW. The ICM diffuse emission has a temperature value of 2.7 keV. Hardness ratio map does not exhibit a remarkable temperature structure except two hot gas regions with temperature values of 3.4 keV. Interestingly both regions are located around the rim of the radio lobes. For probing point sources, we have performed a multiband source detection on EPIC images in soft (0.3-1 keV), medium (1-1.6 keV) and hard (1.6-10 keV) bands. Our source detection yields 56 X-ray sources, from which about 15 per cent seem to have optical counterparts. In order to get the energy spectrum of these sources and split the entire population into different types, we construct an X-ray color-color classification scheme. The spectral properties of the brightest sources were presented by individual fittings. We obtained so far the best spectral fitting for three brightest sources (NGC547, NGC545 and NGC541).