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Title: Herschel-Astrophysical Terahertz Large Area Survey: detection of a far-infrared population around galaxy clusters

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Abstract: We report the detection of a significant excess in the surface density of far-infrared sources from the Herschel-Astrophysical Terahertz Large Area Survey within similar to 1Mpc of the centres of 66 optically selected clusters of galaxies in the Sloan Digital Sky Survey with $\langle z \rangle$ similar to 0.25. From the analysis of the multiwavelength properties of their counterparts we conclude that the far-infrared emission is associated with dust-obscured star formation and/or active galactic nuclei (AGN) within galaxies in the clusters themselves. The excess reaches a maximum at a radius of similar to 0.8Mpc, where we find $1.0 \pm 0.3 S(250) > 34$ mJy sources on average per cluster above what would be expected for random field locations. If the far-infrared emission is dominated by star formation (as opposed to AGN) then this corresponds to an average star formation rate of similar to $7M(\text{circle dot}) \text{ yr}^{-1}$ per cluster in sources with $L(\text{IR}) > 5 \times 10^{10} L(\text{circle dot})$. Although lensed sources make a negligible contribution to the excess signal, a fraction of the sources around the clusters could be gravitationally lensed, and we have identified a sample of potential cases of cluster-lensed Herschel sources that could be targeted in follow-up studies.