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Studying the impact of galaxy cluster morphologies on their detection through SZ effect

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In any cosmological analysis based on the galaxy cluster number count, a very important ingredient is the selection function of the detection method used to produce the galaxy cluster catalog. Indeed, an incorrect determination of this function can lead to biases in the cosmological parameters estimated from the data. In this work we aim to study the possible impact of complex cluster morphology on the selection function of the multi-frequency matched filtering (MMF) algorithm, used to detect galaxy clusters through the Sunyaev-Zel' dovich (SZ) effect. For the determination of the selection function, we apply the same method as in Planck Collaboration XXVII (2015), using mock cluster images from hydrodynamical simulations injected in the Planck high frequency maps. We compare these results with the analytical form of the completeness derived from assuming gaussian noise, and with the same method of injection/detection using spherical clusters generated from a generalised NFW profile.

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