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NGC 1068 MATISSE imaging and thermal map of the dust close to

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In the Unification Theory of AGNs the concept of “the torus” plays a crucial role to discern between Type-1 and Type-2 AGNs. Its emission, coming from hot and warm dust peaks at infrared wavelengths, which makes MATISSE an ideal instrument to observe it. The wide spectral coverage of the L, M and N bands, and the high spatial resolution that MATISSE offers, together with its capability to combine the beams of four telescopes to do interferometry, therefore generating closure phases, make the instrument a versatile tool for the study of AGNs. NGC 1068, being one of the closest AGNs, has been considered a key science case for MATISSE. In this talk I will present the first image reconstructions of the dusty heart of NGC 1068, and the thermal and extinction map derived through Gaussian modelling and aperture photometry. By cross-identifying this map with ALMA and VLBA maps and the water masers, we can determine the position of the super massive black hole. This analysis unveils an optically thick ring that is obscuring the central engine at parsec scales and a less optically thick disk extending to at least 10 pc. We find a striking similarity between the morphologies of the radio free-free emission and the thermal emission of the dust in both, the L and N bands. We also find that the cold obscuring dust is mainly formed by amorphous olivines and carbon grains.

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