Assessing the performance of forthcoming Infrared telescopes

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PROPOSITIONS

accompanying the dissertation

ASSESSING THE PERFORMANCE OF FORTHCOMING INFRARED TELESCOPES

1. In a microwave kinetic inductance detector array, the responsivity based on the readout frequency response is inversely proportional to the responsivity based on a calibrated optical source, for a small difference in optical power (Chapter 2).

2. By using a two-dimensional Gaussian function, it is possible to characterise the level of crosstalk on microwave kinetic inductance detector arrays and correct images for this effect a posteriori (Chapter 3).

3. At z<7, having ancillary *Hubble Space Telescope* data to complement the NIRCam broad-band observations obtained with the *James Webb Space Telescope* is fundamental to limit the fraction of outliers in redshift (Chapter 4).

4. When observing galaxies with the two imaging cameras on the *James Webb Space Telescope*, observations with the MIRI/F560W and/or F770W broad-band filters are essential to have a good estimation of stellar masses at z=10 (Chapter 5).

5. The presence of numerous nebular emission lines makes the photometric redshift and stellar mass estimation challenging (Chapter 4, 5).

6. The multi-Gaussian decomposition of the specific star-formation-rate distribution allows for the derivation of the main-sequence of star-forming galaxies without selection effects (Chapter 6).

7. The fraction of starbursts increases with redshift and decreases with stellar mass (Chapter 6).

8. A high percentage of PhD students and post-docs leave astronomy because of the nomadic lifestyle associated with the astronomy career.

9. North Italy is not Milan.

10. It is possible to obtain a PhD degree in astrophysics without working during weekends.

11. Astronomical observations are based on the principle of the "maximum results with the minimum effort".

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