Deep observations with an ELT in the Global Multi Conjugated Adaptive Optics perspective

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Summary

Sky surveys are one of the symbols of the modern astronomy because they can allow big collaborations, exploiting multiple facilities and shared knowledge.

We investigated how the new generation of extremely large telescopes will perform in this field of research. In fact they will play a key role because of their angular resolution and their capability in collecting the light of faint sources.

Our simulations combine technical, tomographic and observational information, and benefit of the Global-Multi Conjugate Adaptive Optics (GMCAO) approach, a well demonstrated method that exploits only natural guide stars to correct the scientific field of view from the atmospheric turbulence. By simulating K-band observations of 6000 high redshift galaxies in the Chandra Deep Field South area, we have shown how an ELT can carry out photometric surveys successfully, recovering morphological and structural parameters. We present here a wide statistics of the expected performance of a GMCAO-equipped ELT in 22 well-known surveys in terms of SR.

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