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Venue:

27/01/2014 at 12:00 in Auditorium

Title:

MOSE: towards an operational flexible-scheduling of ground-based astronomical observations at ESO sites

Abstract:

All observing operations of new-generation ground-based astronomical telescopes will employ the Service Mode. To optimize the flexible-scheduling of scientific programs and instruments, the optical turbulence (OT) forecast is mandatory, particularly when observations are supported by adaptive optics (AO). Without the OT forecast many of the potential advantages provided by AO facilities might be neutralized. Optical turbulence measurements cannot provide this information. Numerical techniques are the best placed to achieve such a goal.

The MOSE project (MOdeling ESO Sites) aims at proving the feasibility of the forecast of **(1)** all the classical atmospheric parameters (such as temperature, wind speed and direction) and **(2)** the optical turbulence i.e. the C_N^2 profiles and all the main integrated astro-climatic parameters derived from the C_N^2 (the seeing, the isoplanatic angle, the wavefront coherence time) above the two ESO sites of Cerro Paranal and Cerro Armazones. The proposed technique is based on the use of non-hydrostatic atmospheric meso-scale models. The final goal of the project aims at implementing an automatic system for the forecasts of the aforementioned parameters to support the astronomical observations above the two sites.

In this seminar I will review the principles on which the proposed technique is based on; I will briefly review the most important challenges associated to the optical turbulence forecast for ground-based observations. I will summarize the most important results we achieved so far, at the end of the MOSE-Phase A, the main issues that should be treated in Phase B and the perspectives at long time scales.

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