Title: ELT - PCS & SPHERE+

Abstract: Extreme Adaptive Optics (XAO) is widely used at current 8-m class telescopes to power high-contrast imaging instruments mostly dedicated to the observation of self-luminous Exoplanets and circumstellar disks. New coronagraph and XAO technologies make it possible to observe fainter planets at smaller angular separation. This is the scientific objective of the SAXO+ upgrade of the SPHERE AO system which is currently in progress. Then, the next generation of 30-40 meter class telescopes will literally open new worlds as direct imaging of Earth-like Exoplanets will come into reach. For this demanding science case, XAO must push the residual halo at small angles down by orders of magnitudes below what can be reached for the 8-m telescopes. New developments are needed in key AO technologies such as DMs with tens of thousands of actuators, fast RTCs supporting advanced control methods, and wavefront sensors with superior sensitivity and the capability to sense phase discontinuities in segmented apertures. The presentation will provide a brief summary of the main Science objectives and the roadmap to PCS. SAXO+ is an important element of the planned R&D and a milestone towards Exoplanet imaging with the ELT.