

## PAIX THE FIRST ROBOTIC ANTARCTICA POLAR MISSION

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Stellar pulsations and Asteroseismology are currently among the fundamental techniques to improve our understanding of the internal structure of stars and the hydrodynamics of their atmosphere. On the observational side, progress is limited by the data accuracy needed to detect numerous modes of oscillations with small amplitudes and by the discontinuous nature of typical groundbased data strings which often introduce ambiguities in the determination of oscillation frequencies. Space missions such as MOST, CoRoT and KEPLER enable to overcome both difficulties, and indeed have considerably enhanced the scope of pulsation and asteroseismology methods. However, the outcome of the space missions on the stellar oscillation fields shows large gaps in terms of the flexibility during the observing runs, the choice of targets, the repair of failures and the inexorable high costs. Now the time has come to implement a new way to study the stellar oscillations with long uninterrupted and continuous observations over 150 days from the ground. PAIX –Photometer Antarctica eXtinction– is a polar programme made of the lowcost commercial components, and achieves astrophysical measurement time-series of stellar fields, challenging photometry from space. PAIX gives a new insight to cope with unresolved stellar enigma and stellar oscillation challenges and offers a great opportunity to benefit from an access of the best astronomical site on Earth –Dome C– where the seeing reaches a median value of 1 arcsec during the polar night. PAIX is attached to the Cassegrain focus of a 40–cm Ritchey-Chr tien optical telescope, with a F/D ratio of 10, located at Dome C in the open field, without any shelter, installed at ice level. PAIX challenges space telescopes and even has more advantages than CoRoT and KEPLER in observing in *UBVRI* bands and then collecting simultaneously multicolor light curves of several targets within the same 12.4 x 8.3 arcmin field of view. PAIX has been antarctized to run under extreme weather conditions with temperatures as low as -80 deg.C, and has been robotized, designed and built by PaixTeam whose operating headquarters are located at Universit  Nice Sophia-Antipolis and Observatoire de la Cote d’Azur.

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