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| The Wide Area Linear Optical Polarimeter - North. Challenges and Triumphs so Far  **John Andrew Kypriotakis1, Siddharth Maharana, A. N. Ramaprakash, Ramya M. Anche, Artem Basyrov, Dmitry Blinov, Carolina Casadio, Kishan Deka, Hans Kristian Eriksen, Tuhin Ghosh, Eirik Gjerløw, Sebastian Kiehlmann, Nikolaos Mandarakas, Georgia V. Panopoulou, Katerina Papadaki, Vasiliki Pavlidou, Timothy J. Pearson, Vincent Pelgrims, Stephen B. Potter, Anthony C. S. Readhead, Raphael Skalidis, Trygve Leithe Svalheim, Konstantinos Tassis, Ingunn K. Wehus**  1 Institute of Astrophysics, FORTH  # Presenting author: John Andrew Kypriotakis, email: ikypriot@physics.uoc.gr  \* Corresponding author: John Andrew Kypriotakis, email: ikypriot@physics.uoc.gr |

abstract

A large victory of cosmological astrophysics was the discovery of E-modes in the polarization of the cosmic microwave background (CMB), back in 2002. Unfortunately, to prove the inflationary model for the early expansion of the universe, one needs to also observe B-modes in the polarization of the CMB. Those 'elusive' modes have fled scientists for years, partly because the magnetized interstellar medium (ISM) polarizes the microwave radiation. For this reason, we started the PASIPHAE project, in order to measure the 3D structure of dust and magnetic field in the polar regions of the Galaxy. In order for this to succeed, 2 'wide area linear optical polarimeters' (WALOPs) (one in the North and one in the South) will be installed, that will measure the polarization of millions of stars during the span of the survey, with polarimetric accuracy of . In this poster, FEW challenges in the design of such an instrument will be presented, as well as few of the solutions.