

Seminarium Astrofizyczne

wtorek 26.10.2021 godz. **17:00 (Unusual start time)**

<https://www.gotomeet.me/NCBJmeetings/seminarium-astrofizyczne>

ID 349-387-373 Password: AstroSemi

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Testing fundamental physics with the South Pole Telescope

The cosmic microwave background (CMB) anisotropies provide a snapshot of the Universe at the time of recombination and their accurate measurements have advanced our understanding of the origin, composition, and evolution of the Universe. However, our view of the primordial Universe is perturbed by the interaction of CMB photons with the intervening matter-energy content. Two physical phenomena stand out. On one hand, the large scale structure deflects the CMB photons path through an effect dubbed weak gravitational lensing, providing a wealth of information on the neutrino and dark sector. On the other, more exotic mechanisms such as primordial magnetic fields and parity-violating physics are thought to rotate the polarization plane of CMB photons via the so-called cosmic birefringence.

In this talk, I will present two recent endeavours carried out with SPTpol, a millimeter-wavelength polarisation-sensitive receiver installed on the South Pole Telescope between 2012 and 2016 that has surveyed 500 deg^2 of the southern sky. I will firstly present the most precise measurement of the CMB lensing potential power spectrum from the ground, and then discuss the current best upper limits on the cosmic birefringence power spectrum. Finally, I will conclude with possibilities that lie ahead with new data coming in from SPT-3G, the new generation camera currently on the sky.

Serdecznie zapraszam,
Agnieszka Majczyna