



THE CHINESE UNIVERSITY OF HONG KONG  
*Department of Physics*  
SEMINAR

# Investigating Future Probes of Cosmic Acceleration

*by*

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*Time: 3:30 - 4:30 p.m.*

*Place: L1, Science Centre North Block, CUHK*

ALL INTERESTED ARE WELCOME

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## Abstract

In recent years a plethora of future surveys have been suggested to constrain the nature of dark energy. We analyse the performance of a number of future dark energy experiments on constraining the nature of dark energy. We adapt a binning approach to the equation of state factor “ $w$ ” and discuss how future weak lensing, galaxy cluster counts, Supernovae and baryon acoustic oscillation surveys constrain the equation of state at different redshifts. We analyse a few representative future surveys, namely DES, PS1, WFMOS, PS4, EUCLID, SNAP and SKA, and perform a principal component analysis for the “ $w$ ” bins. We also discuss the possible explanations that the observed accelerated expansion of the Universe are the introduction of a dark energy component or the modifications of gravity at large distances. We investigate how proposed galaxy cluster surveys will allow one to distinguish the modified gravity scenarios from dark energy models. We find that cluster counts can distinguish the Dvali-Gabadadze-Porrati model from a dark energy model. This should be easily achievable with forthcoming Sunyaev-Zel’dovich cluster counts, such as the South Pole Telescope in conjunction with the Dark Energy Survey.