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Probing Dark Energy with Galaxy Clusters

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The abundance and spatial clustering of galaxy clusters provides a promising probe of the nature of the dark energy, sensitive to both geometry and the rate of growth of large-scale structure. This talk will provide an overview of future surveys aimed in part at exploiting this technique, discuss the main systematic effects which potentially limit its precision, and describe methods for controlling and mitigating those uncertainties. A hallmark of future cluster surveys will be the confluence of multiple methods for observing clusters, including optical, weak lensing, Sunyaev-Zel'dovich, X-ray, and dynamical measures of cluster properties.