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Cosmological Constraints from Galaxy Clusters Identified in the 2500-square-degree SPT-SZ Survey LINDSEY BLEEM, Argonne National Laboratory, SOUTH POLE TELESCOPE TEAM — The South Pole Telescope (SPT) recently completed a three band mm-wavelength survey of $\sim$2500 deg^2 of the southern sky. One of the primary objectives of this survey was the creation of a mass-limited sample of galaxy clusters selected via the Sunyaev- Zel'dovich effect. In this talk I will present recent and upcoming cosmological results derived using a sample of 516 galaxy clusters identified in the SPT-SZ Survey. The abundance of such galaxy clusters is a powerful cosmological probe as it depends upon both the expansion history of the universe and the growth of density fluctuations. With projected improvements in mass calibration, the SPT cluster sample will constrain models of Dark Energy with a precision comparable to the best current constraints from geometric measurements of the universe, and, by measuring the effect of Dark Energy on the growth of structure, serve as an independent test of the standard dark energy paradigm.

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