630

THE SOUTH POLE TELESCOPE

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A 10 meter diameter telescope (the South Pole Telescope, or SPT) is currently being constructed for deployment at the NSF South Pole research station in 2006/2007. It is designed to do very sensitive, large-area surveys of the millimeter and submillimeter sky, such as are required to map small angular scale fluctuations in the cosmic microwave background radiation. To reduce the effects of sidelobes, the telescope uses an off-axis primary mirror and is surrounded by a large reflective ground shield. The secondary optics and receiver are housed in a heated receiver cabin to simplify year-round observations. The telescope optics support a one degree field of view at 2mm wavelength, and will feed a new multi-color 1000-element bolometric array. The first science target for this instrument will be to search for (as yet) unknown galaxy clusters, using the Sunyaev-Zel'dovich Effect. The survey should yield many thousands of clusters, and, in concert with redshifts provided by optical and IR followup observations, will provide a sensitive test of the nature of Dark Energy in our universe.