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The Dark Energy Spectroscopic Instrument (DESI) and Survey (15' + 5')

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DESI is a Stage IV ground-based dark energy experiment that will study baryon acoustic oscillations (BAO) and the growth of structure with a wide-area galaxy and quasar spectroscopic redshift survey. The DESI instrument consists of a new wide-field (3.2 deg. field of view) corrector plus a multi-object spectrometer with 5000 robotically positioned optical fibers. It will be installed at prime focus on the Mayall 4m telescope at Kitt Peak, Arizona. The fibers feed 10 three-arm spectrographs producing spectra that cover a wavelength range from 360-980 nm and have resolution up to 5000. The DESI instrument is designed for a 5 year, 14,000 sq. deg. survey of targets that trace the evolution of dark energy. In particular, we will measure the redshifts galaxies to $z = 1.6$ and the Lyman Alpha forest to $z > 2$. DESI is the successor to the BOSS spectroscopic redshift survey and complements imaging surveys such as the Dark Energy Survey (DES), which recently completed year 3 out of the planned 5 years of operations, and the Large Synoptic Survey Telescope (LSST), which will start operations early in the next decade.

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