

Telescope / Facility	Instrument	Brief Description	Site ^A	Operation	Principle Investigators (ref.)
Muon Telescopes		Geiger–Müller Trays	MW	1955–	Fenton, G. (Parsons 2000)
Neutron Monitor		12-counter monitor, part of Australian Neutron Monitor Network	MW	1957–	McCracken, K. (McCracken 2000)
Muon Telescopes		High-zenith angle observation (76° N and S)	MW	1968–	Jackyln, R. (Jackyln 2000)
Cosmic Ray Observatory		Surface and underground cosmic ray observatory, with neutron monitor, muon telescopes and cosmic ray vault	MW	1971–	Jackyln, R. then Duldig, M. (Jackyln 2000, Duldig 2002)
Cosmic Ray detector			Mc	1959–	Pomerantz, M. (Pomerantz 2000)
CosRay Facility		Neutron monitor network, 10 sites (2 in Antarctica)	Mc	1960–	Bieber, J. (Bieber et al. 2004)
Cosmic Ray detector			SP	1964–?	Pomerantz, M. (Pomerantz 2000)
CosRay Facility	Neutron monitor	Neutron monitor network, 10 sites (2 in Antarctica)	SP	1964–1974, 1977–	Bieber, J. (Bieber et al. 2004)
Solar Telescope		Solar oscillations using 8 cm heliostat	SP	1979–1985	Pomerantz, M. & Grec, G. (Grec et al. 1980)
		248x244 pixel array detector added		1981–1982	Harvey, J. & Duvall, T. (Harvey 1989)
SPOT (South Pole Optical Telescope)		2" periscope style telescope to evaluate optical seeing	SP	1984–1988	Oliver, J. (Chen et al. 1987)
EMILIE (Emission Millimetrique)		First submillimetre telescope at Pole. 45 cm mirror with single pixel, liquid helium cooled bolometer, observing at 460, 720, 850 & 920 μm	SP	1984	Pajot, F. (Pajot et al. 1989)
EMILIE II		Upgrade on EMILIE for CMBR anisotropy. 40 GHz bandpass bolometer operating at 100 GHz.	SP	1986–1987	Dragovan, M., Stark, A. & Wilson, R. (Pomerantz 1986)
SPASE (South Pole Air Shower Experiment)		Array of 16 scintillation detectors over 6200m ²	SP	1987–1996	Pomerantz, M. & Watson, A. (Smith et al. 1989)
Penguin Dewar		³ He bolometer for CMBR	SP	1987–1989	Dragovan, M. (Dragovan et al. 1990)
Cucumber Land	Miss Piggy	1 m ² aperture Bell Labs offset horn antenna, operating with single-pixel 1 mm bolometer, for CMBR	SP	1988–1989	Dragovan, M. & Stark, A.
	Balloon Gondola	UC Santa Barbara			Lubin, P.
	White Dish prototype	Princeton			Peterson, J.
White Dish		1.4 m telescope measuring CMBR anisotropy at 75–105 GHz	SP	1992–1993	Peterson, J. (Tucker et al. 1993)
Python		First part of the COBRA (Cosmic Background Radiation Anisotropy) program. 0.75 m telescope mapping CMBR at 37–39 GHz, 39–45 GHz, and 90 GHz	SP	1994–1997	Peterson, J. (Coble et al. 1999)
SPASE 2 (South Pole Air Shower Experiment 2)		Array of 120 scintillation detectors over 16000 m ²	SP	1994–	Gaisser, T. (Dickinson et al. 2000)
GASP (Gamma Astronomy at the South Pole)	VULCAN	Air Cherenkov array of nine modules, working with SPASE2	SP	1994–	
AMANDA A + II (Antarctic Muon And Neutrino Detector Array)		Six mirrors searching for Cherenkov light from cosmic rays, generated by a gamma ray interaction in the upper atmosphere	SP	1994–1997	Morse, R. & Gaidos, J. (Morse & Gaidos 1989)
SPIREX (South Pole Infrared Explorer)		Downward pointing photomultiplier tube (PMT) array in the ice to detect Cherenkov radiation from neutrino interactions with nuclei	SP	1994–	
		60 cm infrared telescope	SP	1994–1999	
	GRIM (Grism Imager)	128x128 NICMOS2 HgCdTe camera sensitive from 1–2.5 μm		1994–1997	Hereld, M. (Hereld 1994)

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	HDIMM (Hartmann Differential Image Motion Monitor)	11" Celestron on SPIREX mount with Hartmann aperture mask		1995–1996	Bally, J. (Loewenstein et al. 1998)
	Abu	1024x1024 InSb detector array for widefield thermal IR (2–5 μm) imaging		1998–1999	Harper, A. (Rathborne & Burton 2005)
Microthermal Turbulence		Microthermal measurements made from a 27 m high tower (1994) and a series of balloon launches (1995)	SP	1994–1995	Vernin, J. (Marks et al. 1996, 1999)
IRPS (Infrared Photometer and Spectrometer)		Near-IR (1–5 μm) sky brightness	SP	1994–1996	Burton, M. & Ashley, M. (Phillips et al. 1999)
Viper		2.1 m CMBR telescope	SP	1995–	(Peterson et al. 2000)
	Corona SPARO (Submillimeter Polarimeter for Antarctic Remote Observations)	Measures total power from 38–44 GHz in two sub-bands Polarimeter for sub-mm mapping. Uses inner 0.7 m of telescope.		1999–2000 1998–2003	Peterson, J. Novac, G. (Novac et al. 2003)
	ACBAR (Arcminute Cosmology Bolometer Array Receiver)	150, 219, 274 & 345 GHz CMBR mapping with 16 element focal plane array		2000–	Ruhl, J. & Holzappel, W. (Runyan et al. 2003)
RICE (Radio Ice Cherenkov Experiment)		Ultra-high energy (>100 TeV) neutrinos interacting with Antarctic ice produce energetic electrons. RICE is designed to detect coherent radio emission from the particle cascades these initiate.	SP	1995–1996	Spiczak, G. (Allen et al. 1998)
AST/RO (Antarctic Sub-millimetre Telescope and Remote Observatory)		1.7 m telescope, for astronomy and aeronomy, operating from 200–2000 μm	SP	1995–	Stark, A. (Stark et al. 2001)
	Major Dobbin Wanda	230 GHz SIS receiver Dual 460-500/810 GHz SIS waveguide receiver		1995 1996	Bally, J. Walker, C. (Walker et al. 1992)
	FLaMR	460–500 GHz SIS quasi-optical receiver		1995–1998	Engargiola, G. (Engargiola et al. 1994)
	492 GHz Schottky diode system PoleStar	Array of four 800–820 GHz fixed-tuned SIS waveguide mixer receivers		1996–1997 2002	Zimmermann, P. Walker, C. (Walker et al. 2001)
	TREND (Terahertz Receiver with NbN HEB Device)	Spectroscopy in the 1.25–1.5 THz range		2003–	Yngvesson, K. (Yngvesson et al. 2001)
	SPIFI (South Pole Imaging Fabry Perot Interferometer)	5x5 array for line imaging from 250–450 μm		2004–	Stacey, G. (Swain et al. 1998)
FTS (Sub-mm Fourier Transform Spectrometer)		Aeronomy, measuring sky emissivity from 60–1000 μm . Mounted next to AST/RO.	SP	2001–2002	Chamberlin, R. (Chamberlin et al. 2003)
MIRAS (Mid-Infrared Array Spectrometer)		Daytime mid-IR (10 μm) sky brightness	SP	1996	Smith, C. (Smith & Harper 1998)
AASTO (Automated Astrophysical Site Testing Observatory)		Automated laboratory platform for remote operation of experiments. Included GTOWER for deployment in field.	SP	1997–	Storey, J., Ashley, M. & Burton, M. (Storey et al. 1996)
	MISM (Mid-Infrared Sky-Monitor)	Mid-IR (4–15 μm) sky brightness		1997–1998	(Chamberlain et al. 2000)
	TMOUNT+B82 (Telescope Mount)	Predecessor to GMOUNT, one-axis operation		1997–1999	
	SODAR (Sonic radar experiment)	Microthermal turbulence up to 900 m elevation		1999–2000	(Travouillon et al. 2003a)

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	GMount (Generic Mount)	Winterised telescope mount with automated pointing		2000–	
	ADIMM (Antarctic Differential Image Motion Monitor)	Visible seeing + scintillation		2000–2003	(Travouillon et al. 2003b)
	AFOS (Antarctic Fibre-Optic Spectrometer)	36 cm telescope, transmission and sky emission from UV to far-red, with fibre-fed spectrometer		2000–2003	(Boccas et al. 1998)
	NISM (Near-Infrared Sky-Monitor)	Near-IR sky brightness at 2.35 μm		2000–2003	(Lawrence et al. 2002)
	SUMMIT (Submillimeter Sky monitor)	Sub-mm (350 μm) sky brightness		2001–2002	(Calisse et al. 2004)
	SPETS (South Pole Exoplanet Transit Search)	Exoplanet search via transits of planets across a star		2004–	Caldwell, D. (Caldwell et al. 2003)
DASI (Degree Angular Scale Interferometer)		13 element interferometer to measure temperature and polarization of the CMBR from 26–36 GHz	SP	1998–2003	Carlstrom, J. (Leitch et al. 2002a)
	QUAD "QUEST at DASI" (Q&U Extragalactic Sub-mm Telescope)	Using DASI as a mount for imaging CMBR polarization at 3 mm	SP	2005–	Piccirillo, L. (Piccirillo et al. 2002)
MOTH (Magneto-Optical filter at Two Heights)		5990 + 7000 \AA filters, for modelling Sun's atmosphere	SP	2002–2003	Jefferies, S.
BICEP (Background Imaging of Cosmic Extragalactic Polarization)		Polarization imaging of CMBR at 100 & 150 GHz at 1° resolution over 20° FOV with 20 cm telescope	SP	2004–	Lange, A. (Keating et al. 2003)
IceCube		One km ³ high-energy neutrino observatory	SP	2005–	Halzen, F., Hulth, P.-O. (Halzen 2004)
SPT (South Pole Telescope)		10 m radio telescope for SZ-effect and sub-mm astronomy	SP	2006–	Carlstrom, J. (Carlstrom 2003)
OASI (Osservatorio Antartico Submillimetrico Infrarosso)		2.6 m Cassegrain telescope for CMBR at 1.1, 1.3 & 3.0 mm	TNB	1987	dall'Oglio, G. (dall'Oglio et al. 1992)
CMBR Anisotropy Experiment			TNB	1998–1999	Piccirillo, L.
CMBR Polarization Experiment		33 GHz	TNB	1997	
HIREGS (High Resolution Gamma-Ray and Hard X-Ray Spectrometer)		20 keV – 160 MeV X-ray and gamma-ray photons	Mc/L	1991–1994	Lin, R. (Boggs et al. 1998)
Tophat/MSAM (The Medium Scale Anisotropy Measurement)		Mapping CMBR anisotropy around polar cap, 150-690 GHz	Mc/L	1992–	Meyer, S. Silverberg, R. & Timbie, P. (Kowitz et al. 1995)
JACEE (Japanese-American Collaborative Emulsion Experiment)		Measure primary composition and spectra of cosmic rays from 1–1000 TeV	Mc/L	1995–1996	Wilkes, R. (Asakimori et al. 1998)
FGE (Flare Genesis Experiment)		80 cm telescope, imaging spectral lines from Sun with tunable filter from 610–660 nm	Mc/L	1995–	Rust, D. & Bernasconi, P. (Rust 1994)
BOOMERANG (Balloon Observations Of Millimetre Extragalactic Radiation ANd Geomagnetics)		1.2 m telescope mapping CMB anisotropy at 90, 150, 240 & 400 GHz at 0.2° resolution	Mc/L	1998–2003	De Bernardis, P. & Lange, A. (de Bernardis et al. 2000)
ATIC (Advanced Thin Ionization Calorimeter)		Composition and energy spectrum of galactic cosmic rays from 50 GeV – 100 TeV with silicon matrix detector	Mc/L	2000–2003	Wefel, J. & Guzik, T. (Ahn et al. 2002)

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TIGER (Trans-Iron Galactic Element Recorder)		Measurement of ultra-heavy ($10 < Z < 40$) galactic cosmic rays	Mc/L	2002–	Binns, W. (Link et al. 2002)
ANITA (Antarctic Impulsive Transient Antenna)		Measure radio pulses generated by neutrino interactions over Antarctic ice sheet, of effective area ~ 1 million km ²	Mc/L	2003–	Gorham, P.
APACHE (Antarctic Plateau Anisotropy CHasing Experiment)		37 cm telescope to map CMBR anisotropies at 1.3, 2.0 & 3.0 mm at 15' angular scale. Summer only.	DC	1996–1999	Dall'Oglio, G. (Valenziano et al. 1998)
AASTINO (Automated Astrophysical Site Testing International Observatory)			DC	2003–	Storey, J., Ashley, M. & Burton, M. (Lawrence et al. 2003)
	IceCam	Battery operated sky-camera to quantify the cloud cover over winter		2002–2003	(Ashley et al. 2005)
	COBBER (Cloud OBSservER)	Battery operated total sky power monitor		2002–2003	(Dempsey et al. 2003a)
	SODAR (Sonic radar experiment)	Microthermal turbulence up to 900 m elevation		2003–	(Travouillon et al. 2003c)
	SUMMIT (Submillimeter Sky monitor)	Sub-mm (350 μ m) sky brightness		2003–	(Calisse et al. 2004)
	MASS (Multi Aperture Scintillation Sensor)	High altitude turbulence		2004–	(Lawrence et al. 2004)
Concordiastro	DIMM (Differential Image Motion Monitor)	Two 28 cm optical telescopes, each with 6cm apertures for DIMM measurements of seeing and isoplanatic angle	DC	2002–	Fossat, E. (Aristidi et al. 2003)
COCHISE (Cosmological Observations at Concordia with High Sensitivity Instrument for Source Extraction)		1.5 m fixed telescope with steerable flat chopping secondary mirror. Atmospheric stability at 1–3 mm. Summer measurements.	DC	1999	dall'Oglio, G. (dall'Oglio et al. 2003)
AIRS (Atmospheric Infrared Sounder)		Validation experiment for space mission	DC	2003	Walden, V. P. (Walden & Storey 2004)
		2.6 m telescope for imaging CMBR polarization at 3 mm	DC	2005–	Piccirillo, L. (Piccirillo et al. 2002)
IRAIT (Italian Robotic Antarctic Infrared Telescope)		80 cm telescope with 5–25 μ m 128x128 mid-IR array camera	DC	2006–	Tosti, G. (Tosti et al. 2003)
Neutron Monitor ^B			EL	1957–1962	
Neutron Monitor			MY	1958–1991	
Neutron Monitor			SY	1960–1961, 1967–1974	
Neutron Monitor			CH	1961–1962	
Neutron Monitor			WI	1962–1969	
Neutron Monitor			VO	1963–1982	
Neutron Monitor			SA	1964–	
Neutron Monitor			DD	1967–	
Neutron Monitor			CY	1969–1970	
Neutron Monitor			GB	1971	
Celestron Telescope		Visual Seeing with 11" Telescope	GB	1989–	(Mosconi et al. 1990)
Neutron Monitor		LARC (Laboratorio Radiacion Cosmica). Collaboration with Italy.	MB	1991–	(Cordaro & Storini 1992)

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^A CH - Cape Hallet (USA); CY - Casey (Australia); DC - Dome C (France/Italy); DD - Dumont D'Urville (France); EL - Ellsworth (USA/Australia); GB - General Belgrano II (Argentina); MB - Marsh Base (Chile); Mc - McMurdo (USA); Mc/L - McMurdo/LDBF (Long Duration Balloon Facility); MW - Mawson (Australia); MY - Mirny (USSR); SA - Sanae (South Africa); SP - Amundsen-Scott South Pole Station (USA); SY - Syowa (Japan); TNB - Terra Nova Bay (Italy); VO - Vostok (USSR); WI - Wilkes (Australia)					

^B Information on Neutron Monitors provided by Marc Duldig, after adaption from Shea & Smart (2000).