Cosmology based reviews

Big-Bang Cosmology

Inflation

Big-Bang Nucleosynthesis

The Cosmological Parameters

Dark Matter - New!

Dark Energy

Cosmic Microwave Background

Neutrinos in Cosmology

Strong team effort-from all participating authors

Experimental Tests of Gravitational Theory

Cosmic Rays

Minor Changes

Most reviews underwent relatively moderate changes.
Primary reason: new Planck results (2018).

Major Changes

Dark Matter

Baudis-Profumo

Totally new review

Theory with new focus on DM properties and production

Astrophysical properties and small scale challenges

Models more broadly represented, now including dark photons, sterile neutrinos, rich dark sectors in addition to wimps and axions

Major Changes

Dark Matter

Baudis-Profumo

Experimental sections include:

Accelerator Searches

Direct Detection: current and future experiments

Astrophysical methods (Indirect) for detection

First year for this set of authors

Major Changes

Dark Matter

Baudis-Profumo

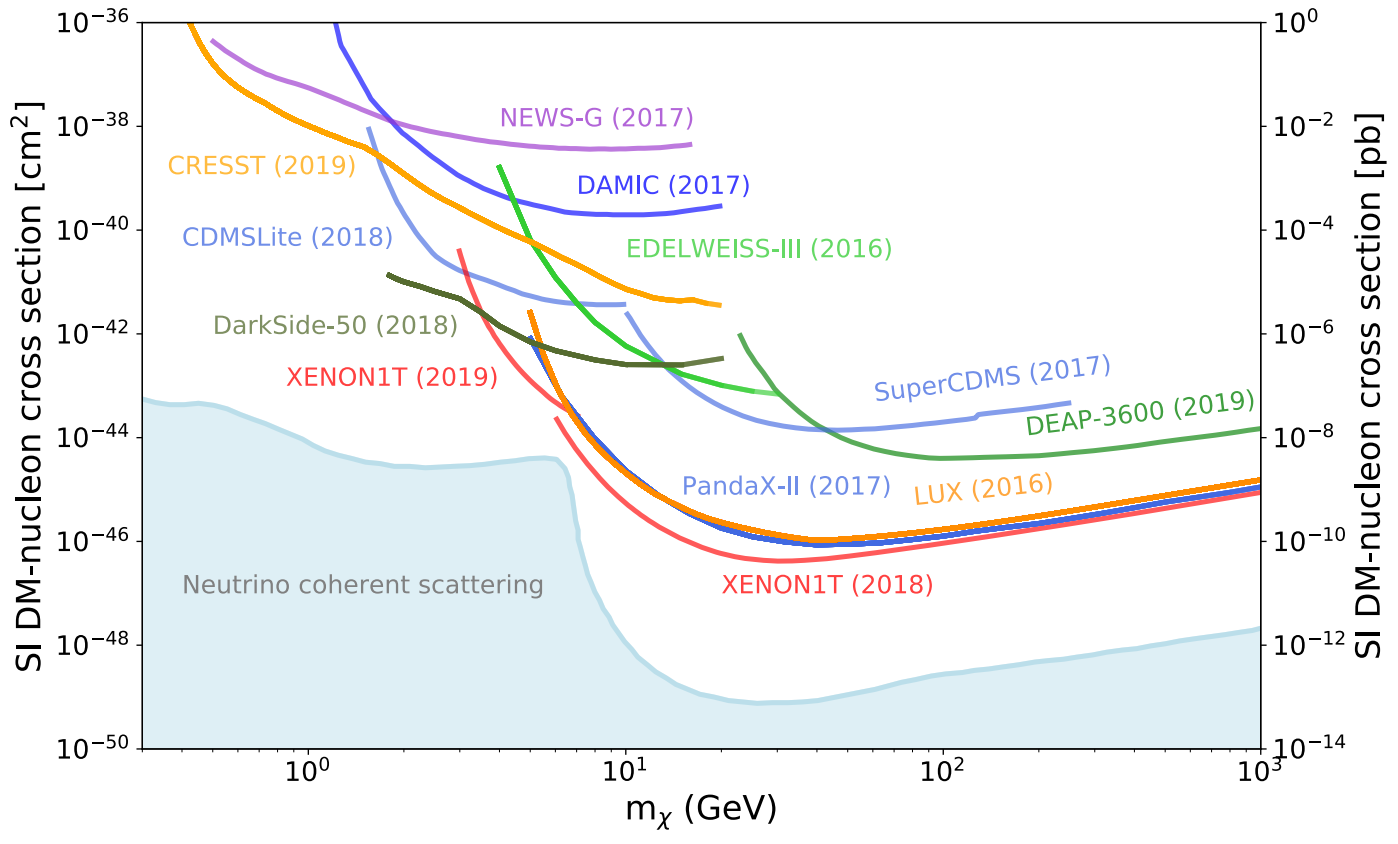
Table 26.1: Best constraints from direct detection experiments on the SI (at high >5 GeV and low < 5 GeV masses) and SD DM-nucleon couplings.

Experiment	Target	Fiducial mass [kg]	Cross section [cm^2]	DM mass [GeV]	Ref.
Spin independent high mass (>5 GeV)					
XENON1T	Xe	1042	4.1×10^{-47}	30	[145]
PandaX-II	Xe	364	8.6×10^{-47}	40	[144]
LUX	Xe	118	1.1×10^{-46}	50	[143]
SuperCDMS	Ge	12	1.0×10^{-44}	46	[135]
DarkSide-50	Ar	46	1.14×10^{-44}	100	[146]
DEAP-3600	Ar	2000	3.9×10^{-45}	100	[147]
Spin independent low mass (<5 GeV)					
LUX (Migdal)	Xe	118	6.9×10^{-38}	2	[149]
XENON1T (Migdal)	Xe	1042	3×10^{-40}	2	[150]
XENON1T (ionisation only)	Xe	1042	3.6×10^{-41}	3	[151]
DarkSide-50 (ionisation only)	Ar	20	1×10^{-41}	2	[152]
SuperCDMS (CDMSlite)	Ge	0.6	2×10^{-40}	2	[138]
CRESST	$CaWO_4$ - O	0.024	1×10^{-39}	2	[137]
NEWS-G	Ne	0.3	1×10^{-38}	2	[169]
Spin dependent proton					
PICO60	C_3F_8 - F	49	3.2×10^{-41}	25	[170]
Spin dependent neutron					
XENON1T	Xe	1042	6.3×10^{-42}	30	[193]
PandaX-II	Xe	364	1.6×10^{-41}	40	[194]
LUX	Xe	118	1.6×10^{-41}	35	[195]

Major Changes

Dark Matter

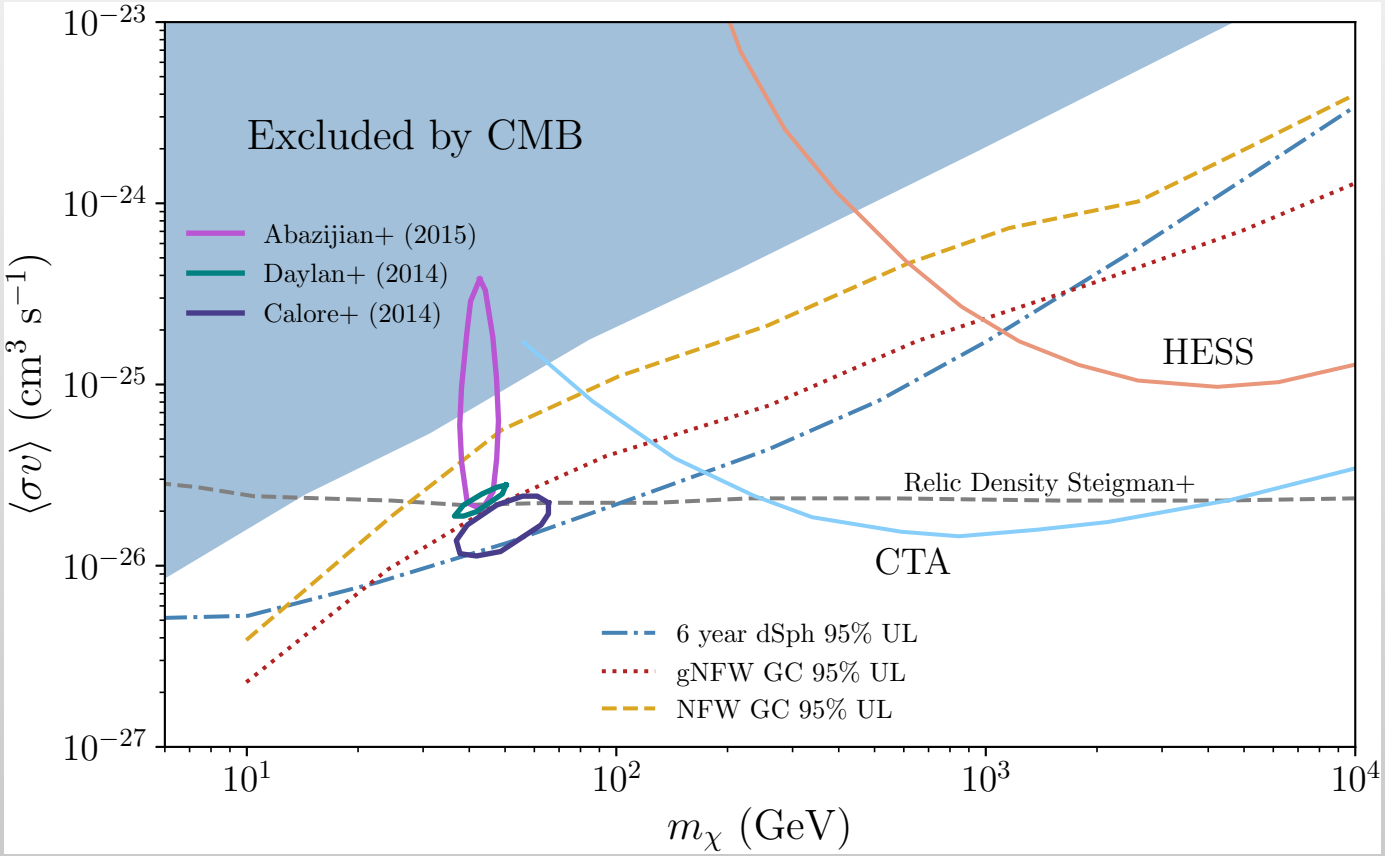
Baudis-Profumo



Major Changes

Dark Matter

Baudis-Profumo



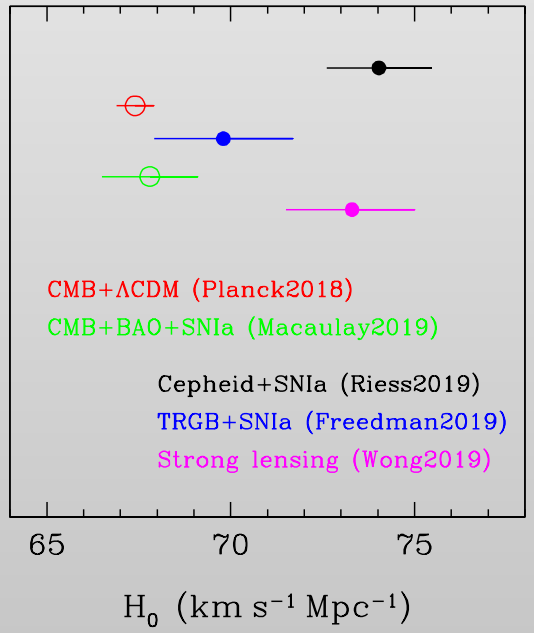
Moderate Changes

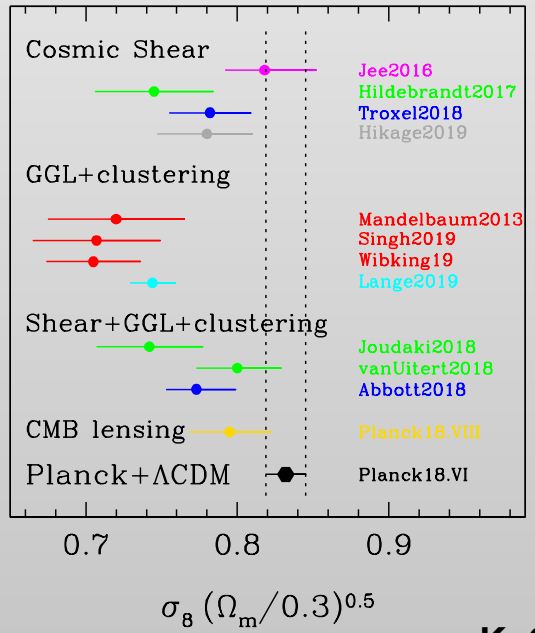
Dark Energy

Weinberg-White

Updates from BOSS and eBOSS and other BAO measurements

Significantly updated discussion on tensions in H_0





Moderate Changes

Cosmological Parameters

Updated on Weak Lensing

Lahav-Liddle

Significantly updated discussion on tensions in H_0

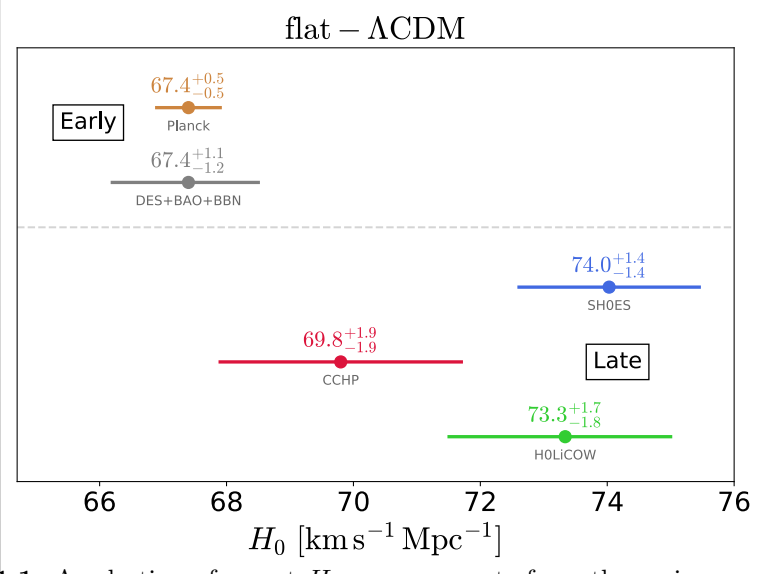


Figure 1.1: A selection of recent H_0 measurements from the various projects as described in the text, divided into early and late Universe probes. The standard-siren determinations are omitted as they are too wide for the plot. Figure courtesy of Vivien Bonvin and Martin Millon, adapted from Ref. 28.

Also

Significant Update on Test of Gravity

Experimental Tests of Gravitational Theory by Damour wa expanded to included new results from LIGO/Virgo

Review is reconstructed and grew from 15 to 27 pages!

Future

No New Reviews or Author changes expected

2013 New Dark Energy

2015 New Inflation

2017 New Neutrinos in Cosmology

2019 New DM/Tests of Gravity

2019 required many small changes required from Planck 2015 to Planck 2018.

Major changes are not envisioned at this point.