RSD & weak lensing : LCDM is alive and well!

A. Blanchard, J.-Y. Héloret, S. Illić

Marseille, May 6th, 2022

The amplitude of matter fluctuations tension, i.e. S_8 tension.

Definition :

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Well adapted for clusters and weak lensing.

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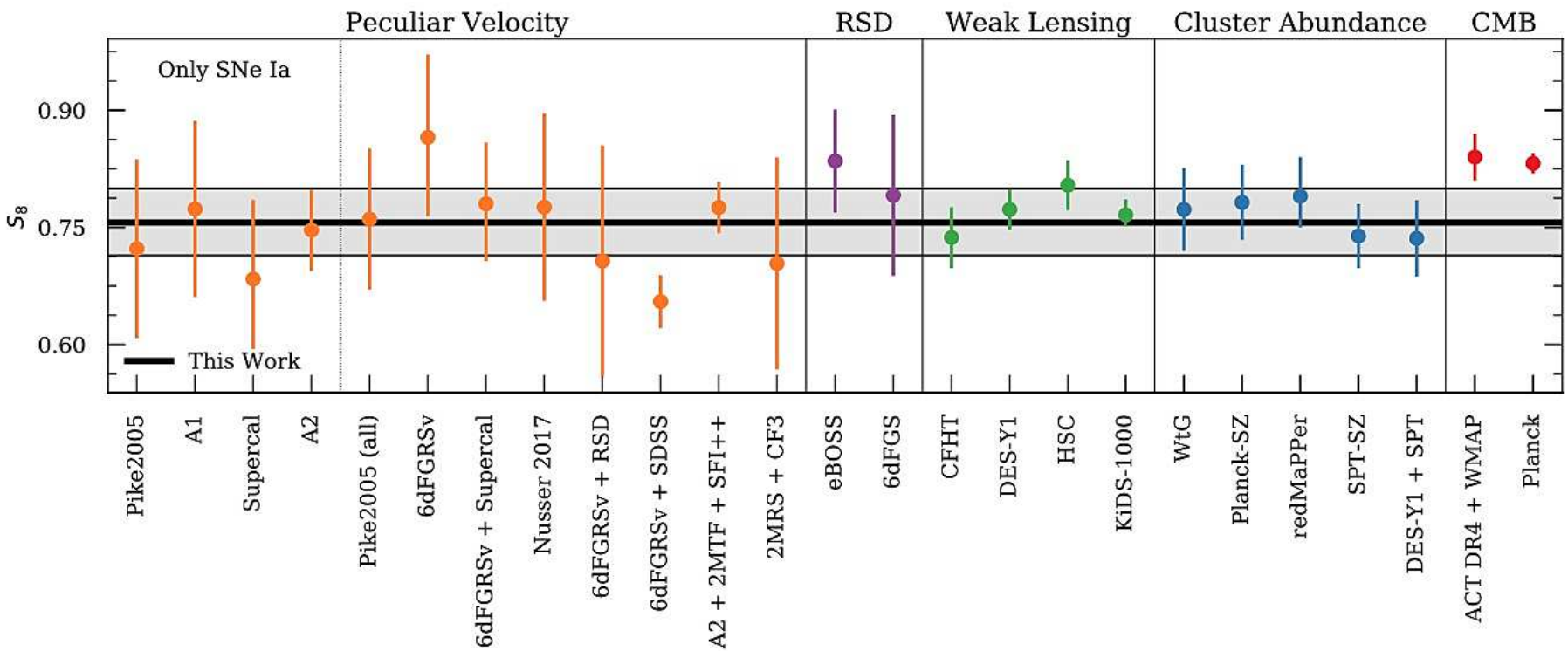

Stahl et al. (2021)

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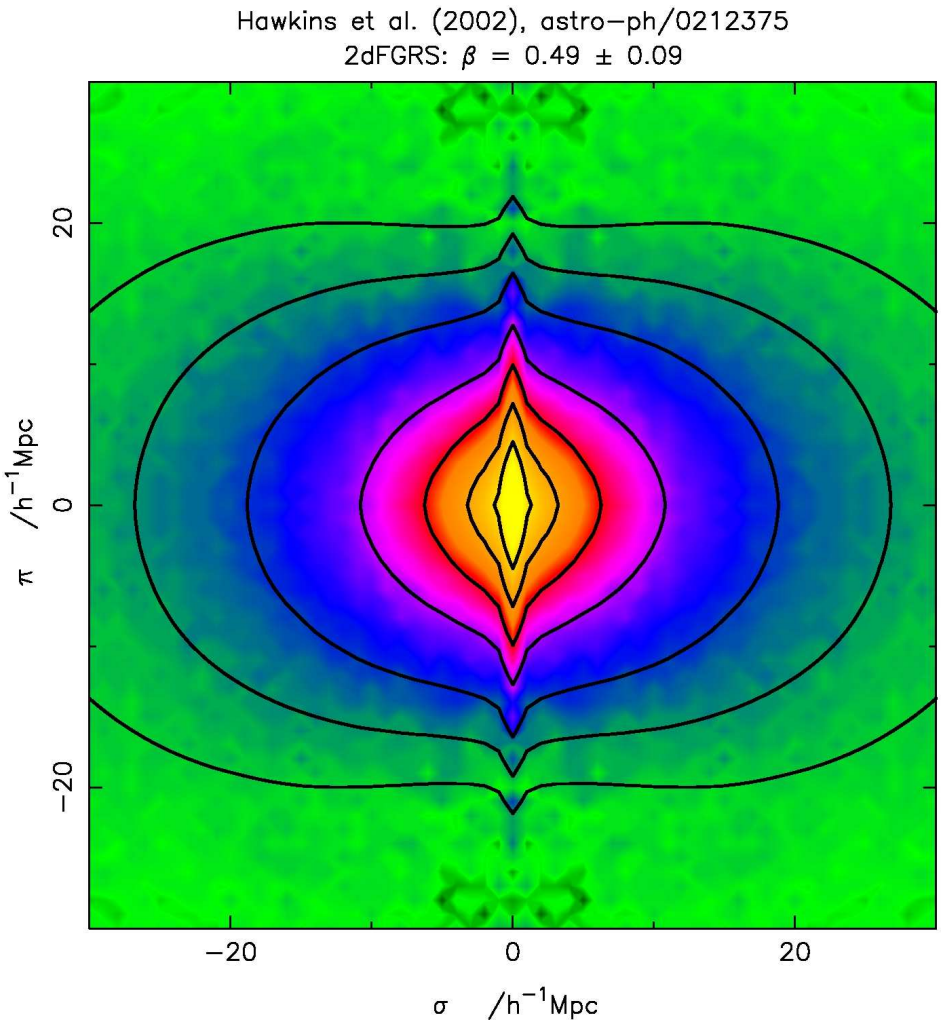

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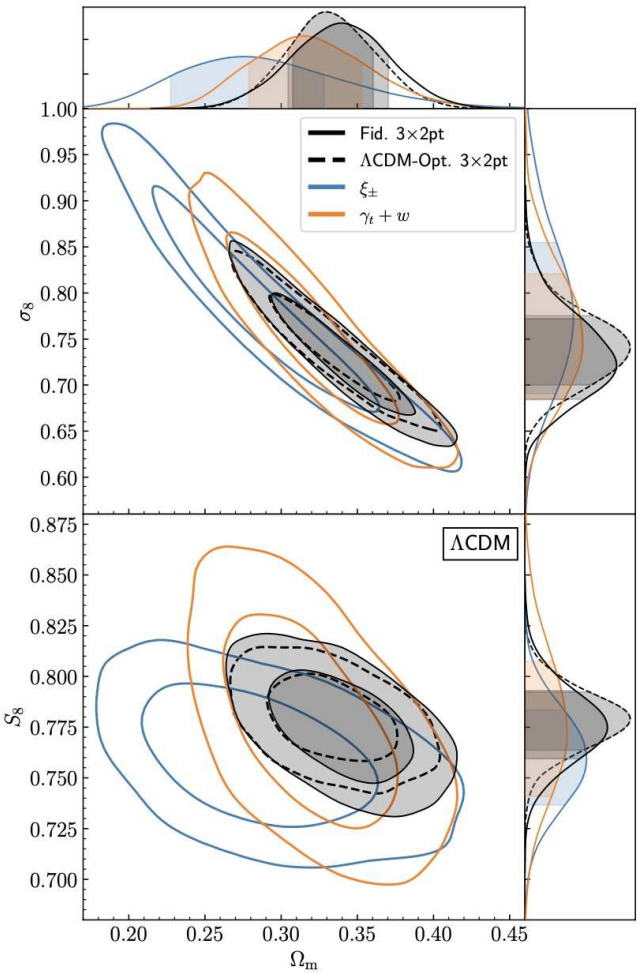
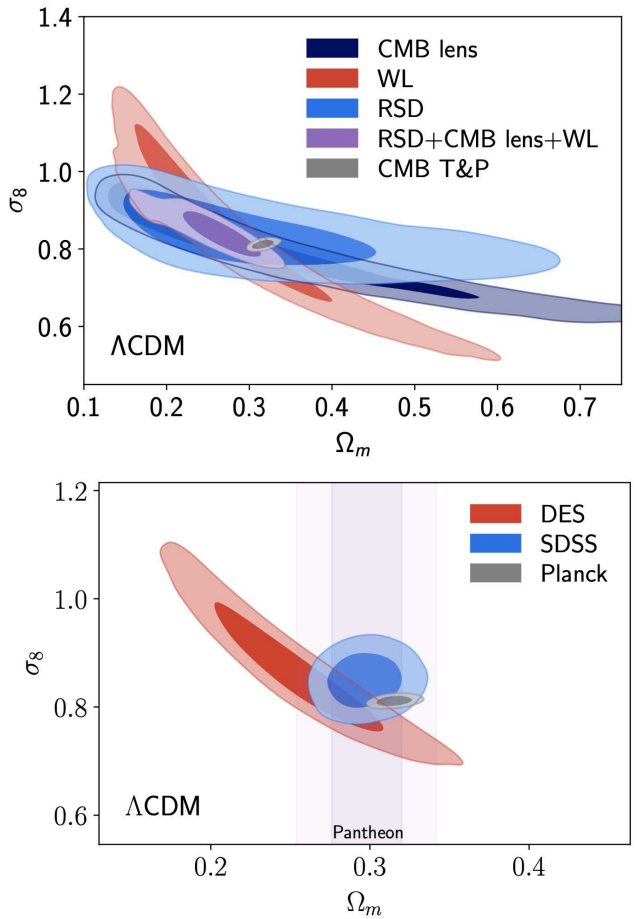


(a) DES3yr 3×2pt



(b) eBOSS

Without Planck calibration on σ_8

Planck+eBOSS-RSD+X-ray+SZ

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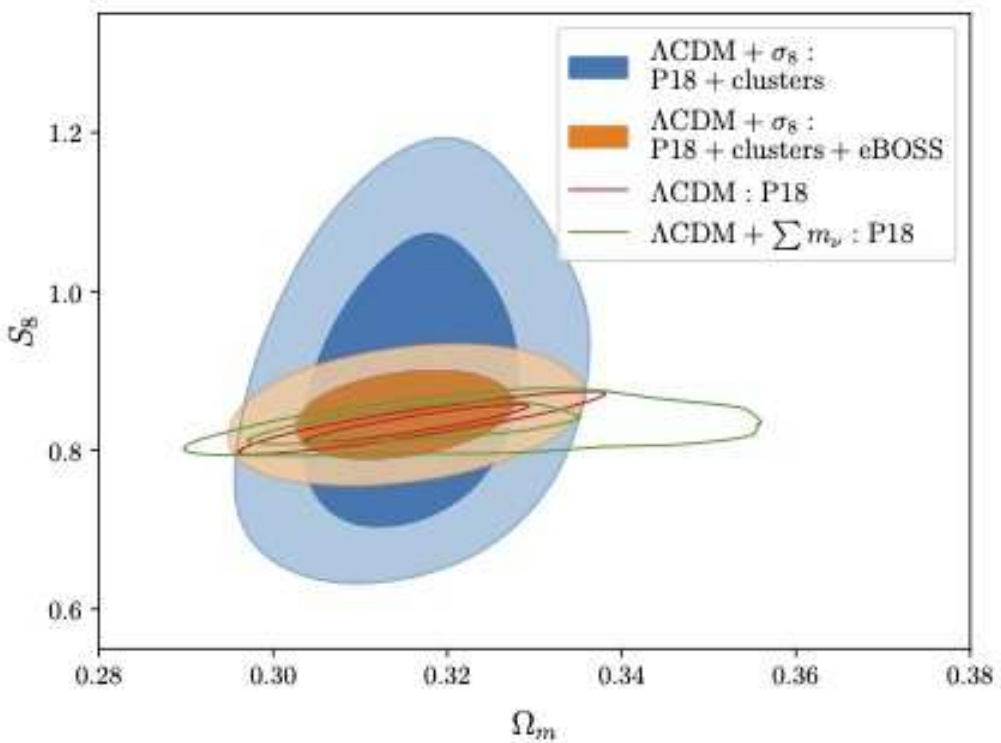

Blanchard & Ilić, A&A, 656, A75 (2021)

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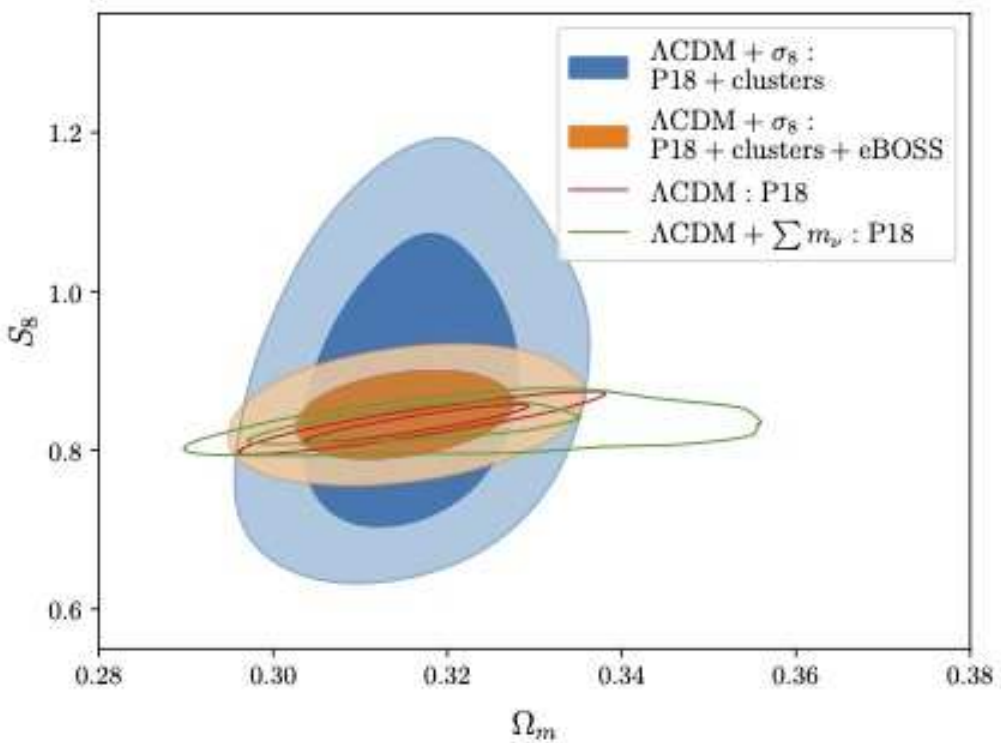

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Also implications for cluster mass calibration

Next step: Jean-Yves Héloret & Stéphane Illić

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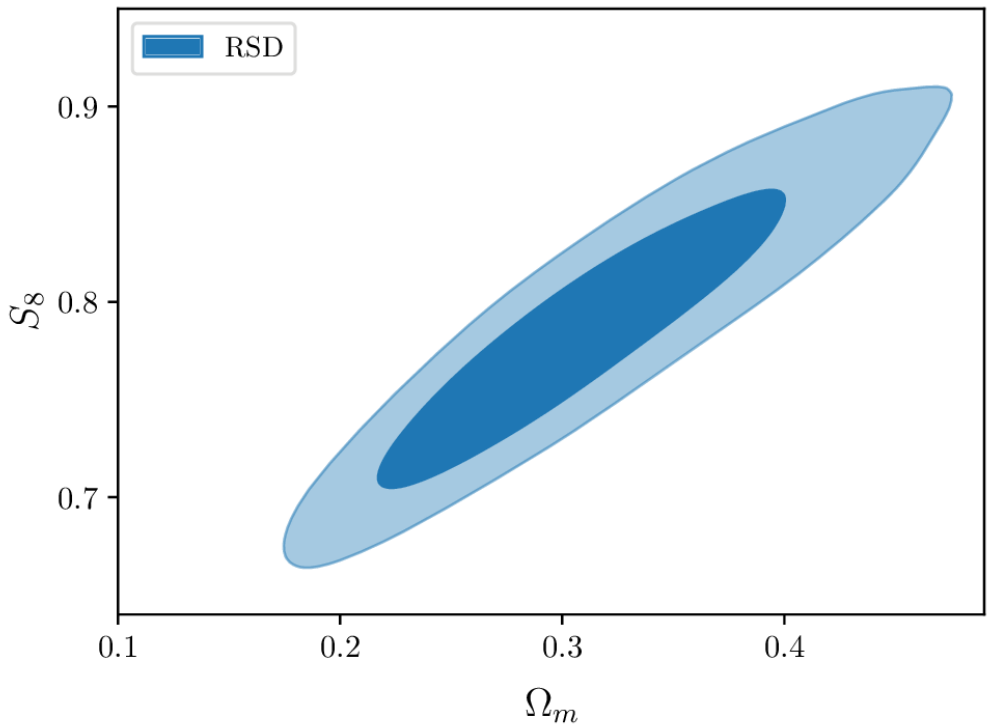
RSD from surveys

Survey	z	$f\sigma_8$	**Refs**
2MFT	0.001	0.51+/-0.085	[19]
6dFGS	0.067	0.423+/-0.055	[20]
SDSS DR13	0.1	0.48+/-0.16	[21]
2dFGRS	0.17	0.51+/-0.06	[22]
GAMA	0.18	0.36 +/- 0.09	[23]
WiggleZ	0.22	0.42+/-0.07	[24]
SDSS LRG60	0.25	0.35+/- 0.06	[25]
BOSS LOW Z	0.32	0.48+/-0.1	[26]
GAMA	0.36	0.44+/- 0.06	[23]
SDSS LRG 200	0.37	0.46+/- 0.04	[25]
WiggleZ	0.41	0.45+/-0.04	[24]
CMASS BOSS	0.57	0.453+/-0.02	[27]
WiggleZ	0.6	0.43+/-0.04	[24]
VIPERS	0.6	0.48+/-0.12	[28]
SDSS IV	0.69	0.447+/-0.039	[29]
VIPERS	0.76	0.44+/-0.04	[30]
SDSS IV	0.77	0.432+/-0.038	[31]
WiggleZ	0.78	0.38+/-0.04	[24]
SDSS IV	0.85	0.52+/-0.10	[32]
VIPERS	0.86	0.48+/-0.10	[28]
SDSS IV	0.978	0.379+/-0.176	[31]
SDSS IV	1.23	0.385+/-0.1	[31]
Fastsound	1.4	0.494+/-0.123	[33]
SDSS IV	1.52	0.426 +/-0.077	[34]
SDSS IV	1.944	0.364+/-0.106	[31]

RSD from surveys: constraints



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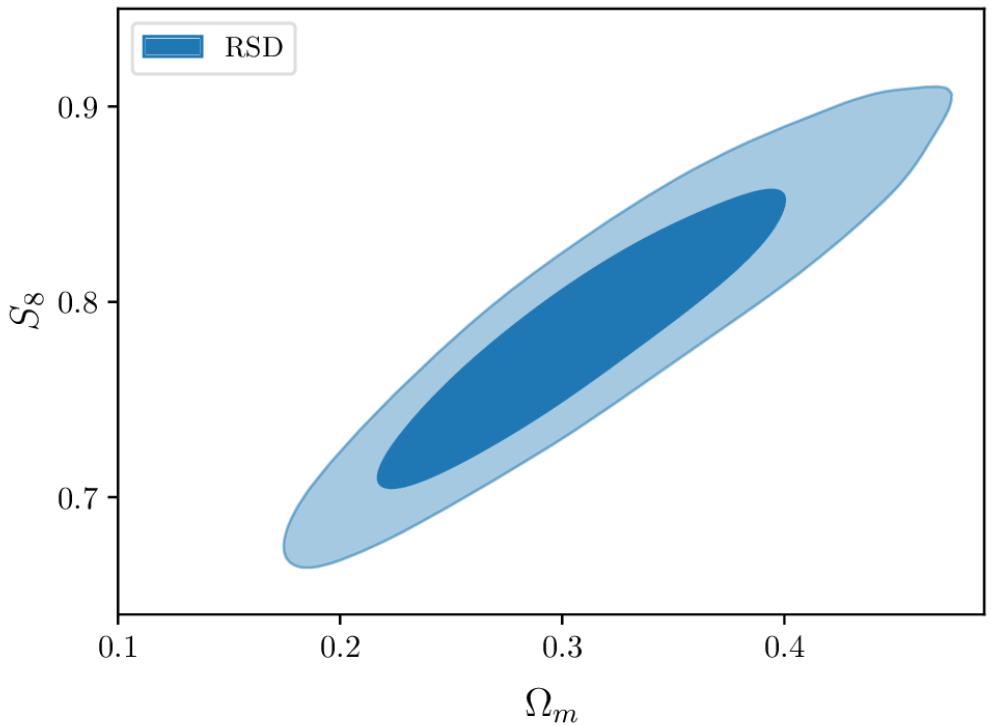

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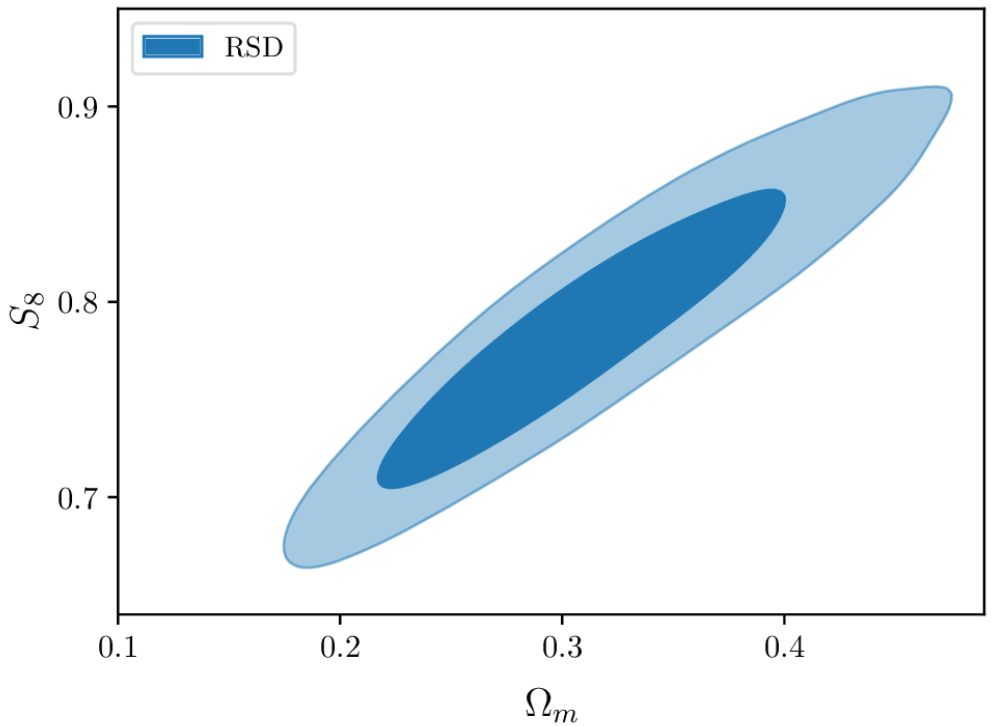

Not surprisingly strong degeneracy
Need to combine with other $low - z$ data

RSD from surveys: constraintsCombining with Pantheon+

Pantheon+: SNIa Hubble diagram (Brout et al., 2022):
$\Omega_M = 0.338 \pm 0.018$ for ΛCDM

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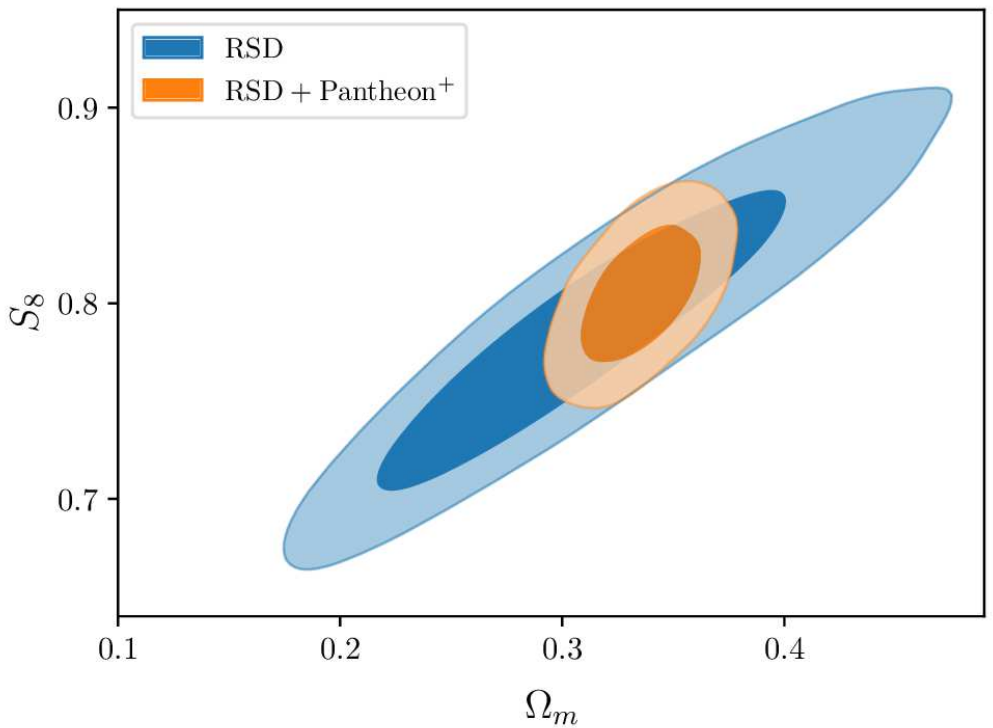

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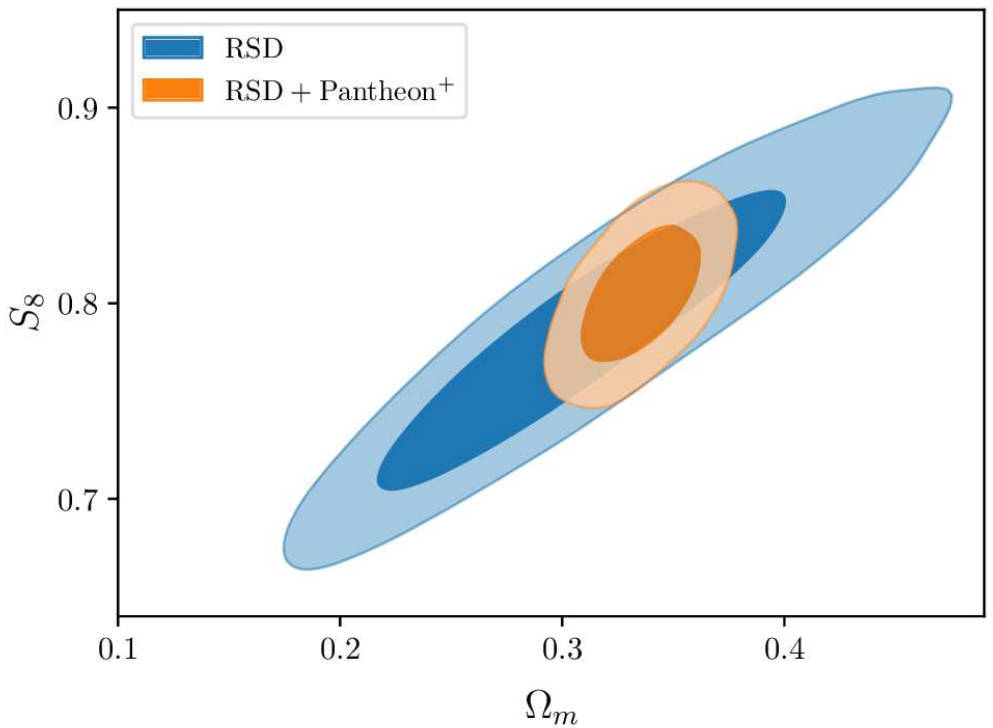

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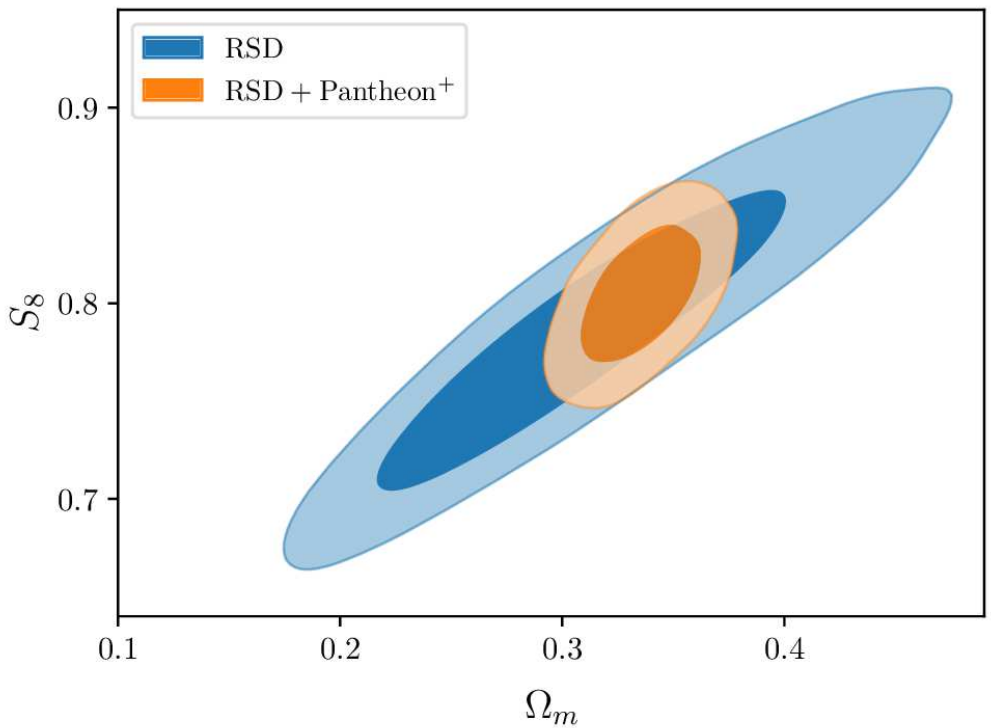

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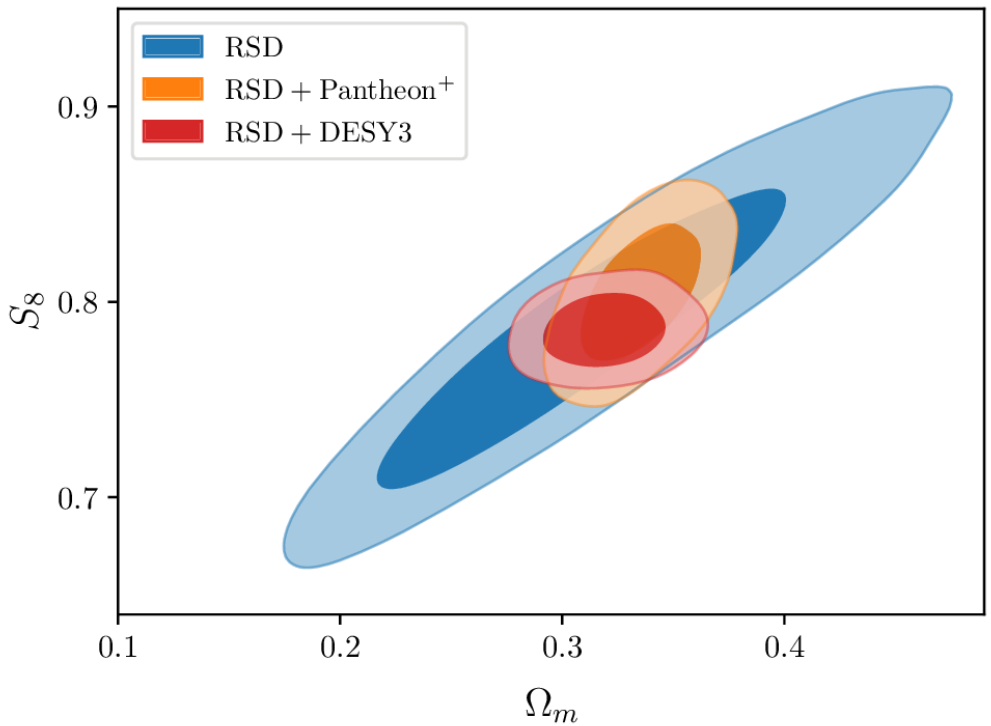

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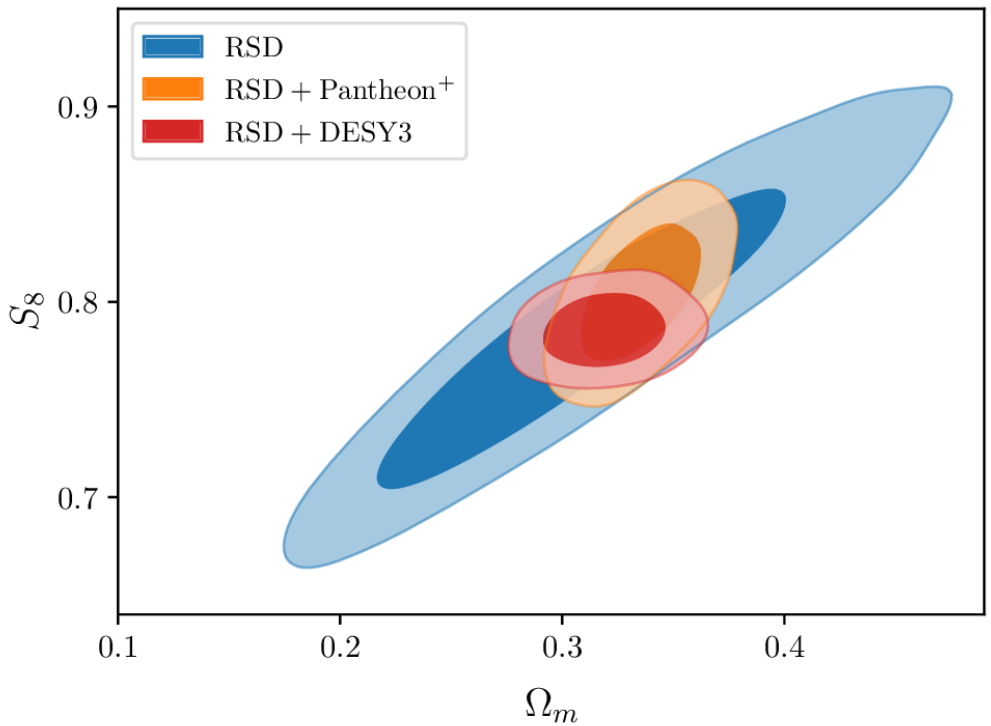

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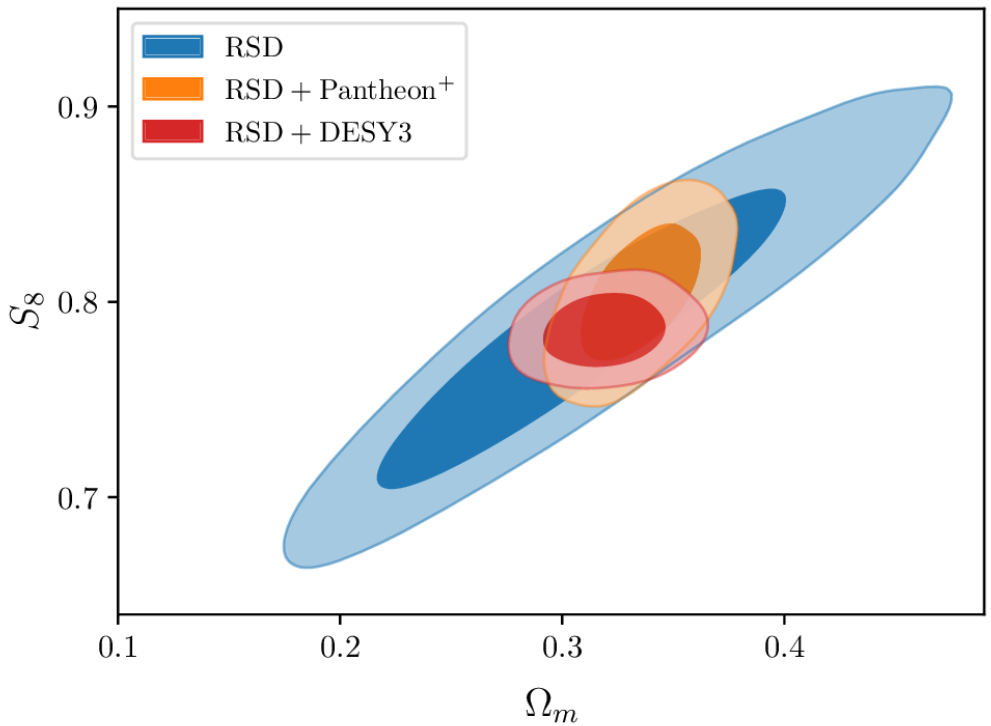

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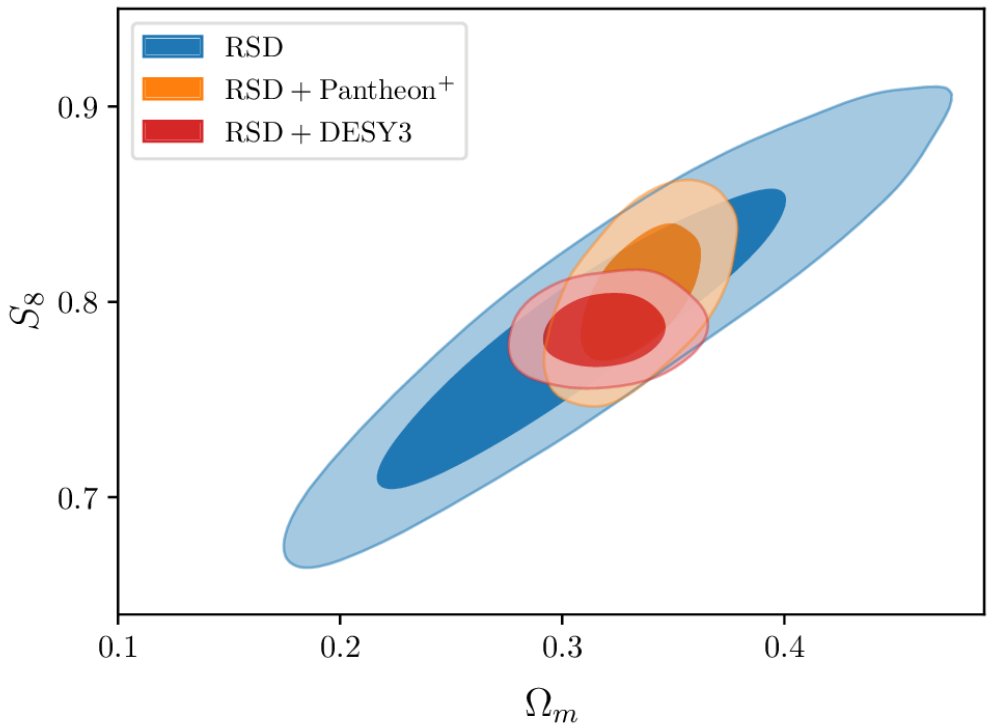

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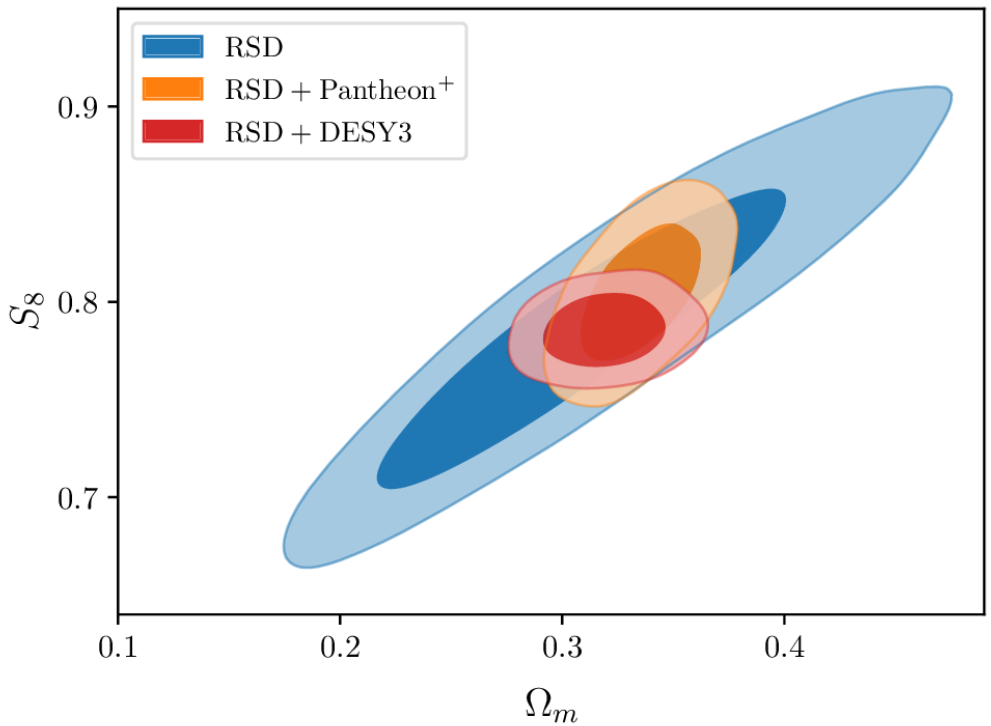

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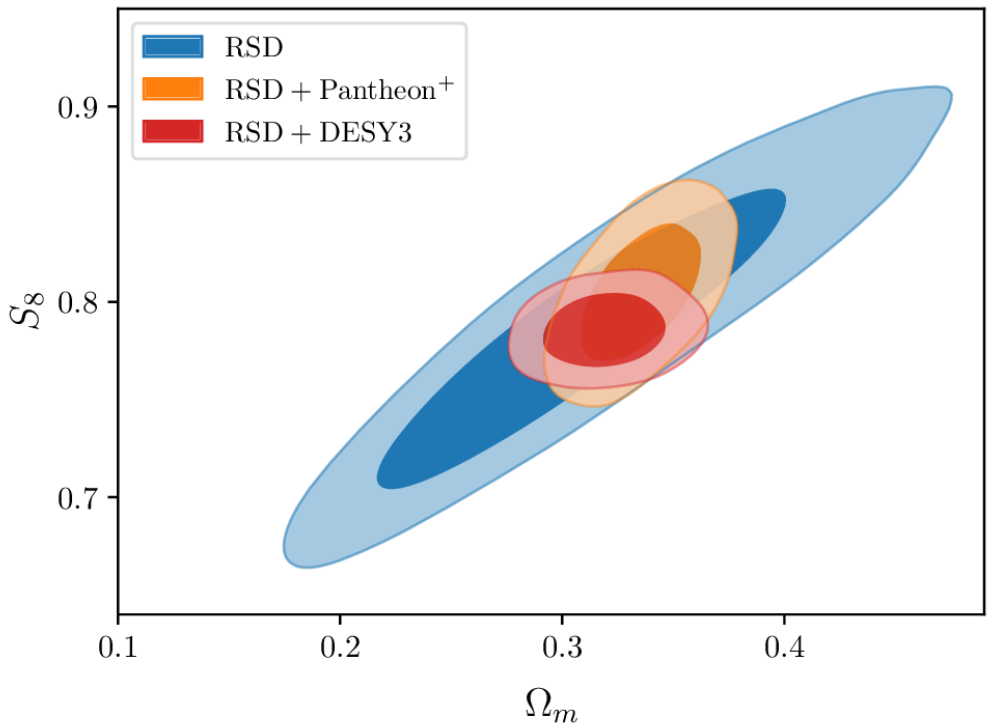

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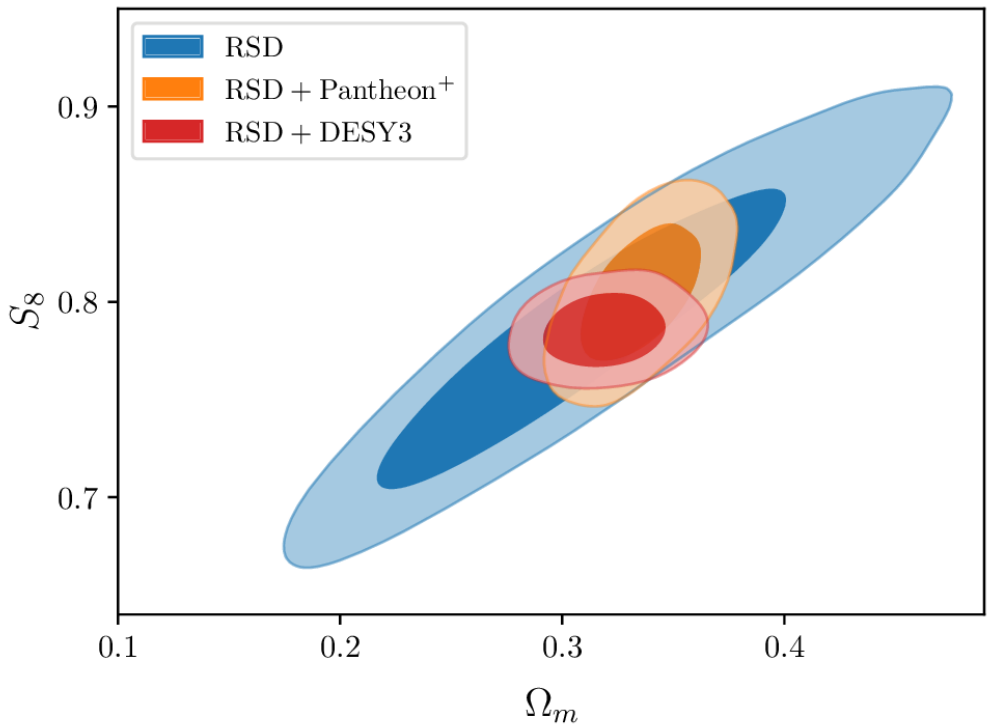

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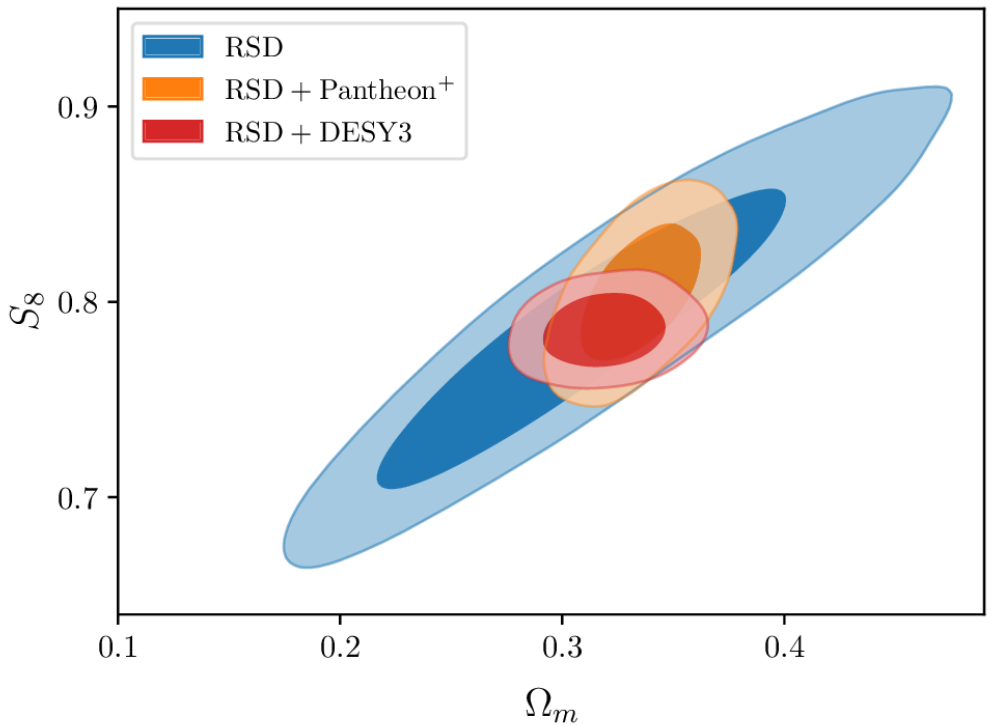

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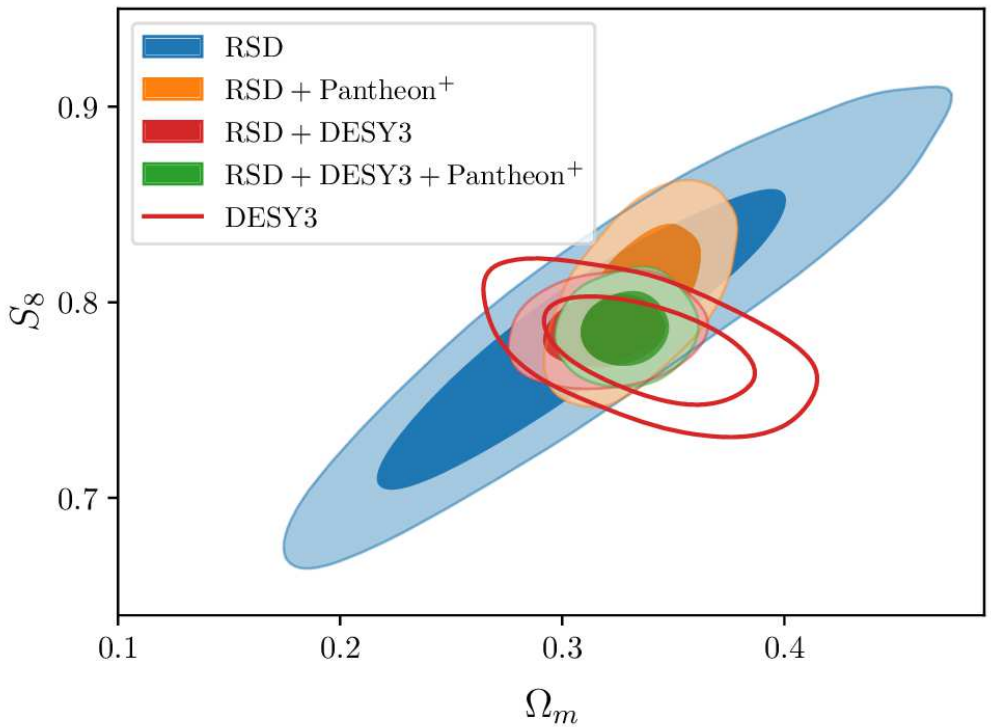

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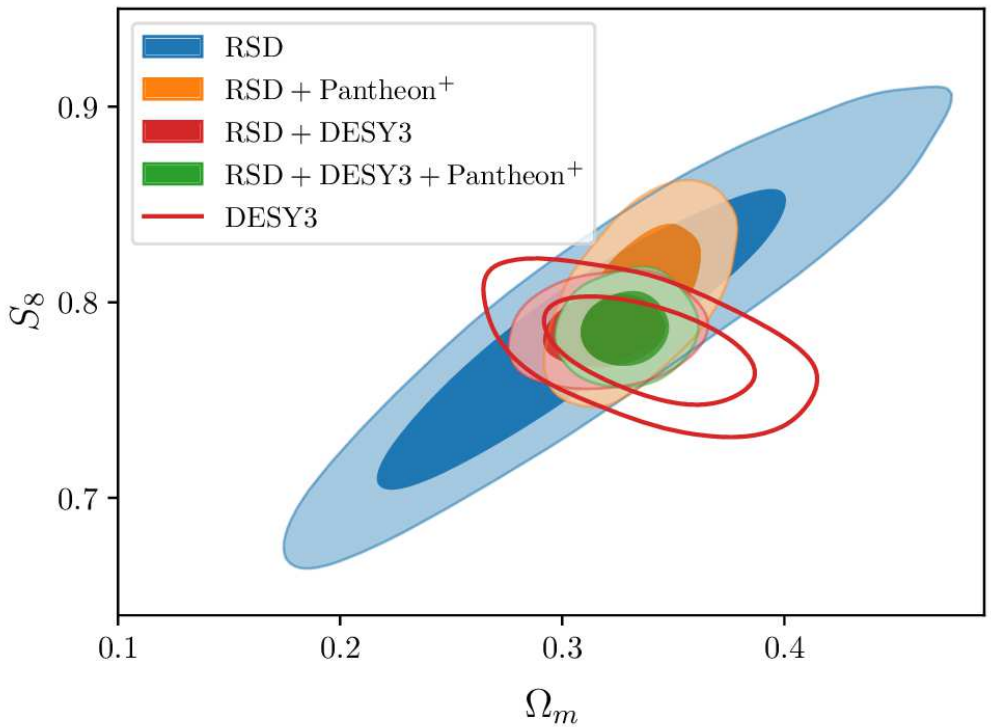

tension : 2.3 σ

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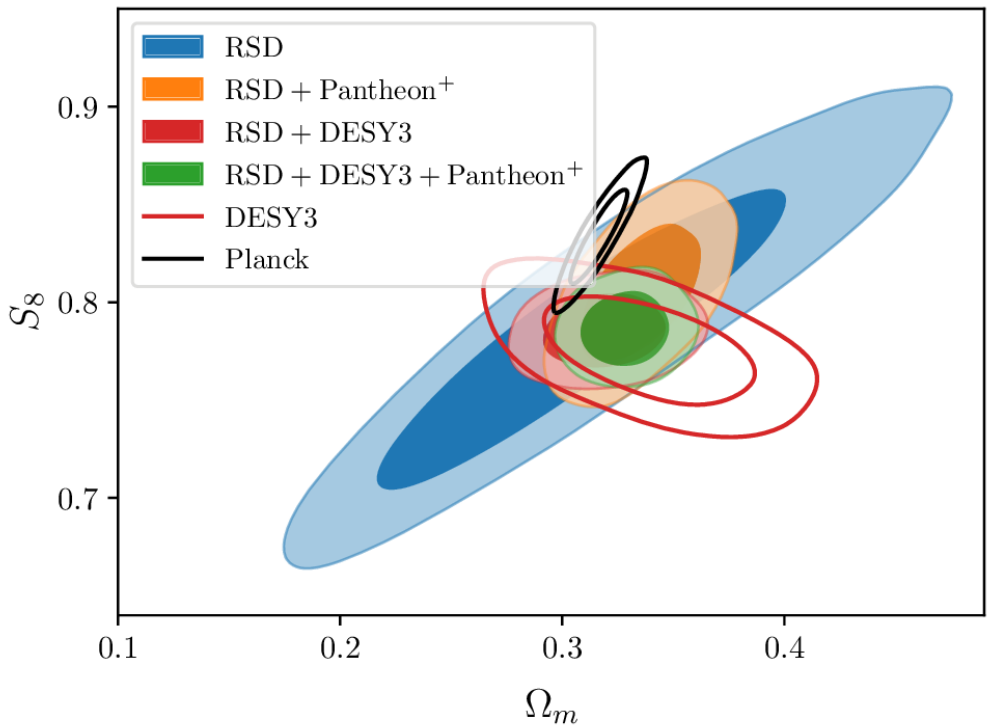

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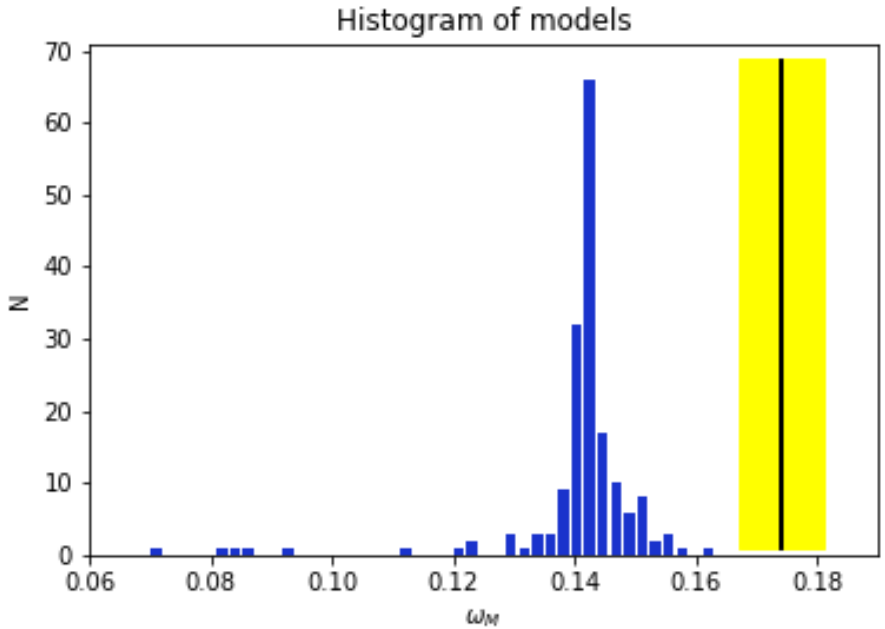

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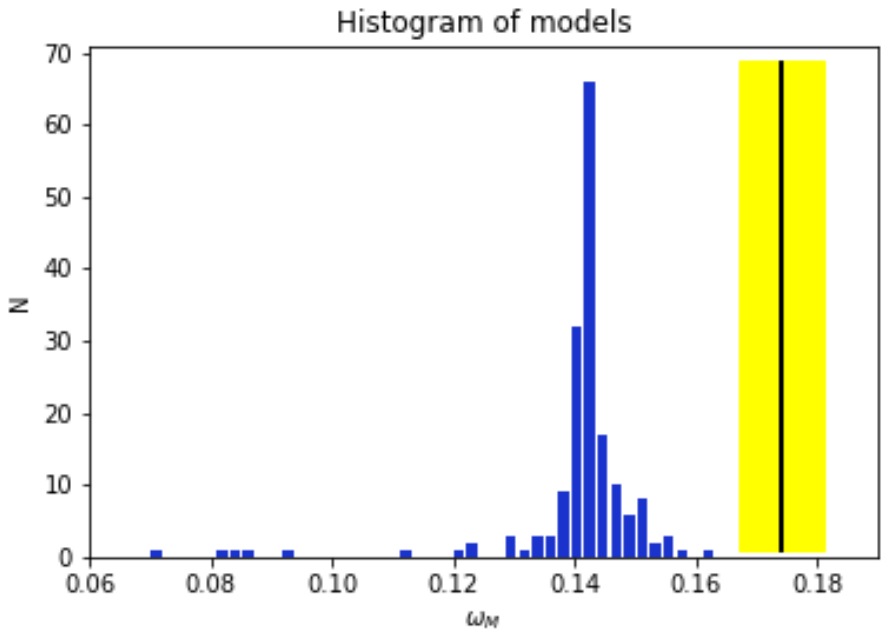

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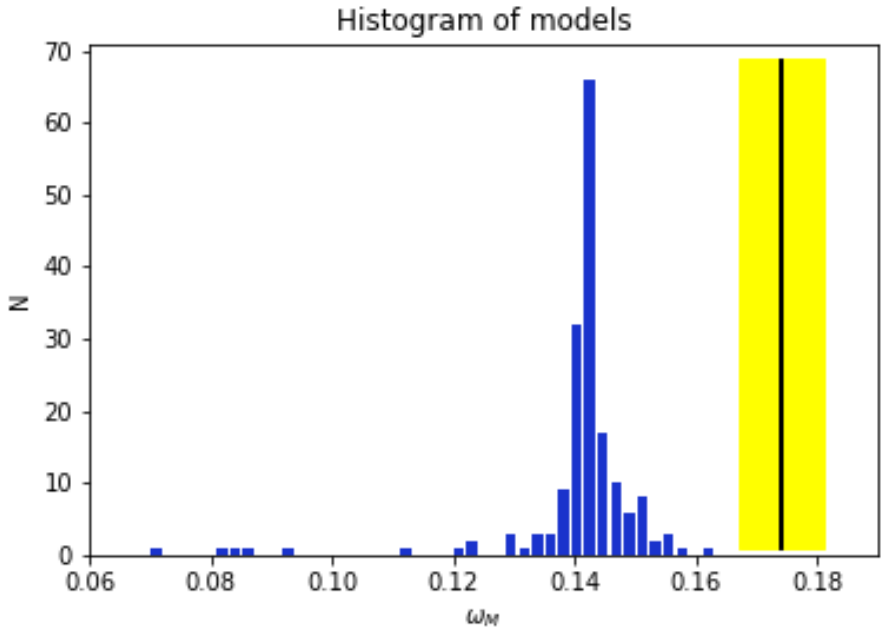

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