Table 1: Summary of ALMA observations.

Band	Date	Antennas†	Time-on-source‡	Pipeline version	Target lines
3	2023 September 24	42-43	136	2023.1.0.124	CO(3-2), HCO^+(4-3), CS(8-7)
6	2023 May 28 - 29	44	122	2022.2.0.68	CO(7-6), C I(2-1)

† The telescope was pointed at RA: 01:25:55.110 and Dec: -01:29:25.000. The position is marginally different from the quasar position, RA: 01:25:55.114; Dec: -01:29:25.272, based on the Gaia catalog.
‡ Total integration time on the quasar in mins.

Table 2: Results from fitting the H_2 absorption lines associated with the proximate DLA at $z \approx 2.662$ towards J 012555.11−012925.00.

redshift	2.663447^{+5}_{-6}		2.664159^{+4}_{-4}		
component	*A*		*B*		
Δv [km s^{-1}]†	135		193		total
H_2 level	log *N* cm^{-2}	*b* km s^{-1}	log *N* cm^{-2}	*b* km s^{-1}	log $N_{\rm tot}$ cm^{-2}
v=0 J=0	$19.32^{+0.12}_{-0.21}$	$1.8^{+0.5}_{-0.6}$	$20.40^{+0.07}_{-0.11}$	$1.5^{+0.6}_{-0.5}$	$20.44^{+0.06}_{-0.11}$
J=1	$20.01^{+0.21}_{-0.21}$	$1.8^{+0.5}_{-0.6}$	$20.97^{+0.06}_{-0.05}$	$1.5^{+0.6}_{-0.5}$	$21.01^{+0.06}_{-0.04}$
J=2	$19.17^{+0.17}_{-0.15}$	$2.9^{+0.6}_{-0.9}$	$19.81^{+0.10}_{-0.09}$	$2.0^{+0.5}_{-0.5}$	$19.90^{+0.09}_{-0.08}$
J=3	$19.30^{+0.15}_{-0.22}$	$4.8^{+0.8}_{-0.7}$	$20.15^{+0.06}_{-0.05}$	$2.9^{+0.8}_{-0.7}$	$20.21^{+0.05}_{-0.05}$
J=4	$18.33^{+0.14}_{-0.21}$	$7.9^{+0.7}_{-0.8}$	$19.00^{+0.05}_{-0.11}$	$4.1^{+0.6}_{-1.1}$	$19.09^{+0.04}_{-0.10}$
J=5	$18.19^{+0.21}_{-0.25}$	$8.2^{+0.6}_{-0.9}$	$19.07^{+0.09}_{-0.11}$	$4.8^{+0.7}_{-0.5}$	$19.12^{+0.09}_{-0.09}$
J=6	$17.27^{+0.19}_{-0.09}$	$9.8^{+0.4}_{-0.4}$	$17.79^{+0.18}_{-0.14}$	$9.1^{+0.3}_{-0.4}$	$17.91^{+0.14}_{-0.11}$
J=7	$17.12^{+0.13}_{-0.13}$	$9.8^{+0.3}_{-0.3}$	$17.83^{+0.13}_{-0.17}$	$8.7^{+0.3}_{-0.4}$	$17.90^{+0.12}_{-0.13}$
J=8	$16.46^{+0.09}_{-0.14}$	$9.8^{+0.3}_{-0.4}$	$16.72^{+0.13}_{-0.10}$	$8.6^{+0.3}_{-0.4}$	$16.91^{+0.09}_{-0.08}$
J=9	$16.13^{+0.11}_{-0.09}$	$9.9^{+0.4}_{-0.3}$	$16.59^{+0.13}_{-0.12}$	$8.6^{+0.4}_{-0.2}$	$16.72^{+0.10}_{-0.09}$
J=10	$15.38^{+0.15}_{-0.09}$	$9.4^{+0.5}_{-0.2}$	$15.38^{+0.12}_{-0.09}$	$9.0^{+0.3}_{-0.5}$	$15.68^{+0.10}_{-0.06}$
J=11	$15.06^{+0.12}_{-0.10}$	$9.6^{+0.3}_{-0.4}$	$15.19^{+0.12}_{-0.14}$	$8.8^{+0.3}_{-0.5}$	$15.43^{+0.09}_{-0.09}$
J=12	$14.63^{+0.13}_{-0.18}$	$10.0^{+0.4}_{-0.5}$	$14.24^{+0.07}_{-0.23}$	$8.8^{+0.3}_{-0.4}$	$14.78^{+0.10}_{-0.13}$
J=13	$14.53^{+0.13}_{-0.12}$	$9.9^{+0.7}_{-0.3}$	$14.13^{+0.11}_{-0.20}$	$9.4^{+1.0}_{-0.4}$	$14.67^{+0.10}_{-0.09}$
v=1 J=0	$15.41^{+0.11}_{-0.32}$	$2.2^{+0.6}_{-0.4}$	$14.70^{+0.34}_{-0.16}$	$2.0^{+1.1}_{-0.4}$	$15.48^{+0.12}_{-0.24}$
J=1	$16.42^{+0.24}_{-0.23}$	$2.8^{+0.4}_{-0.2}$	$15.20^{+0.67}_{-0.12}$	$3.6^{+0.5}_{-0.7}$	$16.45^{+0.23}_{-0.22}$
J=2	$15.46^{+0.21}_{-0.08}$	$2.9^{+0.3}_{-0.4}$	$14.84^{+0.15}_{-0.11}$	$3.6^{+1.9}_{-0.4}$	$15.55^{+0.18}_{-0.06}$
J=3	$16.24^{+0.15}_{-0.16}$	$3.0^{+0.5}_{-0.2}$	$14.90^{+0.75}_{-0.16}$	$3.5^{+1.9}_{-0.4}$	$16.25^{+0.17}_{-0.14}$
J=4	$15.25^{+0.11}_{-0.13}$	$4.9^{+0.7}_{-0.6}$	$14.49^{+0.14}_{-0.13}$	$5.3^{+1.0}_{-0.7}$	$15.32^{+0.10}_{-0.11}$
J=5	$15.80^{+0.10}_{-0.16}$	$5.3^{+0.6}_{-0.5}$	$14.34^{+0.93}_{-0.16}$	$6.5^{+0.9}_{-1.2}$	$15.81^{+0.14}_{-0.14}$
J=6	$14.66^{+0.09}_{-0.12}$	$6.5^{+0.7}_{-0.5}$	$13.75^{+0.21}_{-0.10}$	$7.9^{+0.4}_{-0.8}$	$14.71^{+0.09}_{-0.11}$
J=7	$15.11^{+0.06}_{-0.13}$	$6.7^{+0.4}_{-0.6}$	$13.44^{+1.03}_{-0.17}$	$7.6^{+0.5}_{-0.8}$	$15.12^{+0.10}_{-0.13}$
total	$20.26^{+0.14}_{-0.18}$		$21.16^{+0.02}_{-0.03}$		$21.19^{+0.02}_{-0.01}$

† The velocity shift respect to systemic redshift $z_{\rm syst} = 2.6618$.

Table 3: Results from fitting the low-ionization metal absorption lines $z \approx 2.662$ towards J 012555.11−012925.00.

comp	redshift	Δv†, km/s	b, km/s	log N(ZnII)	log N(PII)	log N(SII)	log N(SiII)	log N(NiII)	log N(FeII)	log N(CrII)	log N(MgI)
1	$2.659372(^{+14}_{-16})$	-199.8	$9.7^{+2.4}_{-1.2}$	$11.98^{+0.23}_{-0.46}$			$14.10^{+0.17}_{-0.24}$	$10.70^{+1.50}_{-0.60}$	$13.40^{+0.04}_{-0.04}$	$10.31^{+1.46}_{-0.18}$	$11.70^{+0.30}_{-0.40}$
2	$2.66019(^{+9}_{-6})$	-128.8	$62.0^{+5.0}_{-8.0}$	$11.97^{+0.26}_{-0.99}$	$13.78^{+0.10}_{-0.24}$	$14.75^{+0.08}_{-0.07}$	$14.22^{+0.09}_{-0.08}$	$13.73^{+0.10}_{-0.23}$	$13.75^{+0.09}_{-0.05}$	$11.00^{+1.10}_{-0.50}$	$12.78^{+0.07}_{-0.12}$
3	$2.660190(^{+7}_{-12})$	-130.9	$4.70^{+0.40}_{-0.30}$	$11.84^{+0.26}_{-0.76}$	$13.50^{+0.70}_{-2.10}$	$13.78^{+0.26}_{-2.84}$	$15.04^{+0.16}_{-0.13}$	$13.40^{+0.30}_{-1.00}$	$14.69^{+0.09}_{-0.06}$	$12.60^{+0.30}_{-0.50}$	$12.75^{+0.14}_{-1.88}$
4	$2.660694(^{+17}_{-29})$	-93.4	$8.8^{+1.5}_{-2.9}$	$11.91^{+0.26}_{-0.52}$	$12.60^{+0.50}_{-1.20}$	$14.00^{+0.40}_{-1.90}$	$14.12^{+0.27}_{-0.19}$	$10.50^{+1.80}_{-0.30}$	$13.49^{+0.05}_{-0.10}$	$12.10^{+0.40}_{-1.10}$	$11.60^{+0.30}_{-0.90}$
5	$2.661146(^{+26}_{-14})$	-54.2	$9.7^{+1.9}_{-1.4}$	$12.10^{+0.13}_{-0.24}$	$13.83^{+0.24}_{-0.19}$	$14.32^{+0.09}_{-0.43}$	$14.92^{+0.12}_{-0.13}$	$12.80^{+0.30}_{-1.70}$	$13.88^{+0.05}_{-0.03}$	$12.20^{+0.40}_{-1.50}$	$12.27^{+0.12}_{-0.20}$
6	$2.661710(^{+40}_{-30})$	-8.0	$21.0^{+7.0}_{-5.0}$	$12.07^{+0.20}_{-0.39}$	$13.48^{+0.17}_{-0.25}$	$14.38^{+0.25}_{-0.33}$	$14.54^{+0.09}_{-0.09}$	$13.48^{+0.13}_{-0.21}$	$13.82^{+0.07}_{-0.06}$	$11.50^{+0.70}_{-1.00}$	$12.33^{+0.09}_{-0.17}$
7	$2.662164(^{+26}_{-38})$	30.7	$5.2^{+2.3}_{-1.4}$	$12.32^{+0.14}_{-0.11}$	$13.50^{+0.50}_{-0.50}$	$14.75^{+0.27}_{-0.21}$	$14.96^{+0.11}_{-0.21}$	$13.10^{+0.30}_{-0.70}$	$14.22^{+0.10}_{-0.13}$	$10.57^{+1.08}_{-0.28}$	$12.72^{+0.17}_{-0.28}$
8	$2.66276(^{+6}_{-5})$	77.0	$28.0^{+6.0}_{-6.0}$	$12.56^{+0.09}_{-0.18}$	$13.78^{+0.11}_{-0.18}$	$14.99^{+0.14}_{-0.17}$	$15.34^{+0.14}_{-0.19}$	$13.64^{+0.12}_{-0.15}$	$14.78^{+0.09}_{-0.10}$	$12.66^{+0.29}_{-0.73}$	$12.85^{+0.07}_{-0.10}$
9	$2.66317(^{+9}_{-5})$	106.5	$7.0^{+13.3}_{-2.0}$	$12.12^{+0.33}_{-0.24}$	$13.57^{+0.27}_{-0.85}$	$14.95^{+0.22}_{-0.34}$	$15.57^{+0.21}_{-0.14}$	$13.40^{+0.26}_{-0.21}$	$14.61^{+0.13}_{-0.20}$	$13.05^{+0.17}_{-0.08}$	$11.60^{+0.80}_{-0.60}$
10	$2.663555(^{+25}_{-17})$	143.5	$15.0^{+3.0}_{-4.0}$	$13.13^{+0.03}_{-0.05}$	$13.59^{+0.23}_{-0.33}$	$15.43^{+0.12}_{-0.19}$	$15.87^{+0.13}_{-0.12}$	$13.97^{+0.05}_{-0.10}$	$15.07^{+0.06}_{-0.09}$	$13.19^{+0.11}_{-0.17}$	$13.64^{+0.08}_{-0.14}$
11	$2.664149(^{+23}_{-18})$	194.1	$16.0^{+3.0}_{-3.0}$	$12.98^{+0.06}_{-0.07}$	$13.78^{+0.13}_{-0.16}$	$15.66^{+0.11}_{-0.13}$	$15.83^{+0.05}_{-0.06}$	$13.81^{+0.09}_{-0.07}$	$15.04^{+0.05}_{-0.06}$	$13.29^{+0.06}_{-0.06}$	$13.53^{+0.03}_{-0.08}$
12	$2.66458(^{+5}_{-4})$	227.9	$5.3^{+2.7}_{-1.5}$	$10.82^{+0.21}_{-0.73}$	$13.10^{+0.60}_{-1.40}$	$14.48^{+0.29}_{-0.77}$	$14.66^{+0.29}_{-0.46}$	$13.42^{+0.12}_{-0.21}$	$14.36^{+0.13}_{-0.18}$	$12.70^{+0.20}_{-0.26}$	$10.23^{+1.36}_{-0.17}$
13	$2.665220(^{+30}_{-40})$	283.2	$49.0^{+4.0}_{-7.0}$	$12.60^{+0.13}_{-0.05}$	$13.53^{+0.08}_{-0.13}$	$15.18^{+0.04}_{-0.09}$	$15.59^{+0.05}_{-0.07}$	$13.78^{+0.07}_{-0.10}$	$14.68^{+0.04}_{-0.05}$	$13.02^{+0.16}_{-0.16}$	$12.90^{+0.09}_{-0.05}$
14	$2.665934(^{+23}_{-21})$	339.2	$7.3^{+1.1}_{-1.0}$	$11.35^{+0.24}_{-0.73}$	$10.20^{+1.37}_{-0.18}$	$14.54^{+0.20}_{-0.27}$	$14.40^{+0.30}_{-0.40}$	$13.15^{+0.29}_{-0.49}$	$14.76^{+0.06}_{-0.07}$	$12.50^{+0.26}_{-0.74}$	$11.88^{+0.23}_{-0.50}$
15	$2.666274(^{+27}_{-80})$	360.9	$15.0^{+3.0}_{-7.0}$	$12.26^{+0.09}_{-0.14}$		$14.30^{+0.29}_{-0.63}$	$14.20^{+0.21}_{-0.29}$	$13.16^{+0.25}_{-0.34}$	$13.38^{+0.18}_{-0.11}$	$11.90^{+0.50}_{-1.70}$	$12.07^{+0.13}_{-0.19}$
16	$2.666801(^{+19}_{-34})$	407.2	$1.10^{+0.70}_{-0.30}$				$14.10^{+0.50}_{-0.90}$	$13.30^{+0.30}_{-0.40}$	$12.73^{+0.33}_{-0.20}$		$13.03^{+0.58}_{-0.24}$
17	$2.66690(^{+25}_{-37})$	439.3	90^{+30}_{-40}				$13.33^{+0.16}_{-0.29}$		$12.51^{+0.26}_{-1.16}$		
18	$2.66790(^{+40}_{-29})$	470.0	70^{+50}_{-30}				$12.60^{+0.40}_{-0.60}$		$12.56^{+0.26}_{-0.23}$		
log $N_{\rm tot}$				$13.60^{+0.02}_{-0.03}$	$14.59^{+0.13}_{-0.06}$	$16.09^{+0.05}_{-0.04}$	$16.444^{+0.039}_{-0.027}$	$14.634^{+0.027}_{-0.024}$	$15.728^{+0.020}_{-0.015}$	$13.863^{+0.029}_{-0.040}$	$14.08^{+0.07}_{-0.06}$
[X/H]				$-0.92^{+0.03}_{-0.03}$	$-0.78^{+0.13}_{-0.06}$	$-0.99^{+0.05}_{-0.04}$	$-1.03^{+0.05}_{-0.03}$	$-1.55^{+0.04}_{-0.03}$	$-1.732^{+0.028}_{-0.025}$	$-1.74^{+0.04}_{-0.04}$	$-3.48^{+0.07}_{-0.06}$
[X/ZnII]				$0.00^{+0.04}_{-0.04}$	$0.14^{+0.13}_{-0.06}$	$-0.08^{+0.06}_{-0.04}$	$-0.11^{+0.05}_{-0.03}$	$-0.63^{+0.04}_{-0.03}$	$-0.81^{+0.04}_{-0.03}$	$-0.82^{+0.04}_{-0.04}$	$-2.56^{+0.08}_{-0.07}$

† The velocity shift respect to systemic redshift $z_{\rm syst} = 2.6618$.

Table 4: Results of fitting the Si II and O I fine-structure levels absorption lines $z \approx 2.662$ towards J 012555.11−012925.00.

comp	redshift	$\log N(\mathrm{Si\,II^*})$	$\log N(\mathrm{O\,I^{**}})$	$\log N(\mathrm{Si\,II^*})/N(\mathrm{Si\,II})$
1	$2.659372(^{+14}_{-16})$	$12.70^{+0.13}_{-0.18}$		$-1.40^{+0.27}_{-0.25}$
2	$2.66019(^{+9}_{-6})$	$13.22^{+0.07}_{-0.07}$		$-1.00^{+0.11}_{-0.11}$
3	$2.660190(^{+7}_{-12})$	$13.58^{+0.15}_{-0.16}$		$-1.46^{+0.20}_{-0.23}$
4	$2.660694(^{+17}_{-29})$	$11.3^{+0.4}_{-1.0}$		$-2.8^{+0.4}_{-1.0}$
5	$2.661146(^{+26}_{-14})$	$12.67^{+0.17}_{-0.26}$		$-2.25^{+0.21}_{-0.28}$
6	$2.661710(^{+40}_{-30})$	$12.84^{+0.11}_{-0.16}$		$-1.70^{+0.14}_{-0.18}$
7	$2.662164(^{+26}_{-38})$	$13.32^{+0.09}_{-0.14}$	$14.0^{+0.5}_{-0.5}$	$-1.64^{+0.23}_{-0.18}$
8	$2.66276(^{+6}_{-5})$	$13.33^{+0.12}_{-0.14}$	$14.24^{+0.09}_{-0.14}$	$-2.01^{+0.22}_{-0.20}$
9	$2.66317(^{+9}_{-5})$	$13.30^{+0.19}_{-0.16}$	$13.2^{+0.9}_{-0.7}$	$-2.27^{+0.24}_{-0.27}$
10†	$2.663555(^{+25}_{-17})$	$13.74^{+0.09}_{-0.09}$	$14.65^{+0.19}_{-0.13}$	$-2.13^{+0.15}_{-0.16}$
11†	$2.664149(^{+23}_{-18})$	$13.59^{+0.05}_{-0.07}$	$14.42^{+0.05}_{-0.10}$	$-2.24^{+0.08}_{-0.09}$
12	$2.66458(^{+5}_{-4})$	$12.84^{+0.16}_{-0.17}$	$10.6^{+2.1}_{-0.3}$	$-1.8^{+0.5}_{-0.4}$
13	$2.665220(^{+30}_{-40})$	$13.35^{+0.05}_{-0.06}$	$14.15^{+0.07}_{-0.07}$	$-2.24^{+0.09}_{-0.08}$
14	$2.665934(^{+23}_{-21})$	$13.20^{+0.09}_{-0.13}$		$-1.2^{+0.4}_{-0.3}$
15	$2.666274(^{+27}_{-80})$	$12.2^{+0.3}_{-0.7}$		$-2.0^{+0.4}_{-0.7}$
16	$2.666801(^{+19}_{-34})$	$11.8^{+0.4}_{-1.1}$		$-2.3^{+1.0}_{-1.2}$
17	$2.66690(^{+25}_{-37})$			
18	$2.66790(^{+40}_{-29})$			

† H_2-bearing component.

Table 5: Results from fitting the C I fine-structure absorption lines $z \approx 2.662$ towards J 012555.11−012925.00.

comp	redshift	Δv†	b	$\log n^{\ddagger}$	$\log I^{\ddagger}_{\mathrm{UV}}$	$\log T$	$\log N_{\mathrm{tot}}(\mathrm{C\,I})$
		$\mathrm{km\,s^{-1}}$	$\mathrm{km\,s^{-1}}$	$\mathrm{cm^{-3}}$	Mathis field	K	$\mathrm{cm^{-2}}$
1	$2.66129(^{+5}_{-6})$	-45.3	$5.2^{+2.1}_{-2.1}$	> 1.5	> 1	$1.5^{+2.7}_{-0.4}$	$13.63^{+0.08}_{-0.11}$
2	$2.66208(^{+9}_{-6})$	22.4	$6.2^{+1.8}_{-2.5}$	> 3.0	> 4.2	$2.8^{+1.4}_{-0.7}$	$13.71^{+0.11}_{-0.10}$
3	$2.66265(^{+22}_{-9})$	67.5	$5.4^{+2.1}_{-2.4}$	–	–	–	$13.30^{+0.27}_{-0.57}$
4	$2.663554(^{+11}_{-17})$	143.2	$7.7^{+1.2}_{-1.1}$	> 2.3	> 3.5	$2.21^{+0.08}_{-0.14}$	$14.46^{+0.05}_{-0.05}$
5	$2.664230(^{+13}_{-18})$	199.0	$3.8^{+0.7}_{-0.4}$	> 2.3	> 3.2	$2.19^{+0.11}_{-0.12}$	$14.92^{+0.18}_{-0.12}$
6	$2.664969(^{+28}_{-36})$	259.1	$0.64^{+4.13}_{-0.14}$	> 2.6	> 4.1	$4.1^{+0.6}_{-1.3}$	$13.72^{+0.30}_{-0.20}$

$C_{\mathrm{f}} = 0.93 \pm 0.1$

† The velocity shift respect to systemic redshift $z_{\mathrm{syst}} = 2.6618$.

‡ These parameters are degenerated (see Fig.4), therefore we provide the lower limit when the second parameter can be neglected.