

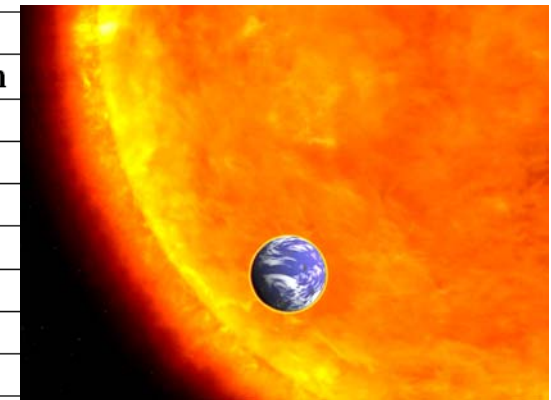
SNR – closest stars per transit

Table 6: Major spectroscopic features and SNR of a transiting Earth for a single transit, for a 6.5-m space based telescope, for the closest stars per stellar subtype (see Table 5). For G2V, we use α centauri A, Gl 559 A at 1.34pc.

Feature	G2V	M0V	M1V	M2V	M3V	M4V	M5V	M6V	M7V	M8V	M9V
O ₃	12.5	1.8	1.5	1.8	1.4	2.1	2.4	1.1	0.5	0.5	0.4
H ₂ O	3.5	1.0	0.9	1.2	1.0	1.8	2.7	1.5	0.8	0.9	0.9
CO ₂	6.3	1.9	1.8	2.4	2.1	3.8	5.8	3.2	1.8	2.0	2.0
H ₂ O	8.1	2.5	2.4	3.2	2.8	5.1	7.8	4.4	2.5	2.8	2.7
CH ₄	1.5	0.5	0.5	0.7	0.6	1.1	1.7	1.0	0.5	0.6	0.6
O ₃	4.5	1.5	1.5	2.0	1.8	3.3	5.2	3.0	1.7	1.9	2.0
CO ₂	4.3	1.4	1.4	2.0	1.7	3.2	5.0	2.9	1.7	1.9	1.9

Name	d(pc)	Sp Type
Gl 887	3.29	M0.5
Gl 15 A	3.56	M1
Gl 411	2.54	M2
Gl 729	2.97	M3.5
Gl 699	1.83	M4
Gl 551	1.30	M5.5
Gl 406	2.39	M6
Gl 473 B	4.39	M7
SCR1845-63A	3.85	M8.5
Denis1048	4.03	M9

6.5-m telescope			
Feature	$\lambda(\mu\text{m})$	$\Delta\lambda(\mu\text{m})$	H(λ),km
O ₃	0.6	0.15	10
H ₂ O	1.9	0.2	5
CO ₂	2.8	0.1	20
H ₂ O	3.3	0.25	20
CH ₄	7.7	0.7	7
O ₃	9.8	0.7	30
CO ₂	15.2	3.0	25



Transits of Earth-Like Planets <http://arXiv.org/abs/0903.3371>

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200hr integration time

Table 3: Major spectroscopic features (col. 1) and SNR (col. 2-12) of a transiting Earth for a total co-added observation time of 200 hrs, for a 6.5-m space based telescope for the Sun and M stars

Feature	G2V	M0V	M1V	M2V	M3V	M4V	M5V	M6V	M7V	M8V	M9V
O ₃	16.9	9.1	8.9	9.4	8.7	9.7	16.9	9.1	8.9	9.4	8.7
H ₂ O	4.8	5.0	6.2	10.5	15.0	19.2	4.8	5.0	6.2	10.5	15.0
CO ₂	8.5	9.7	12.3	22.2	33.8	44.1	8.5	9.7	12.3	22.2	33.8
H ₂ O	11.0	12.8	16.4	30.0	46.6	61.1	11.0	12.8	16.4	30.0	46.6
CH ₄	2.0	2.5	3.3	6.4	10.5	14.0	2.0	2.5	3.3	6.4	10.5
O ₃	6.2	7.8	10.3	20.0	32.8	43.9	6.2	7.8	10.3	20.0	32.8
CO ₂	5.9	7.5	9.9	19.5	32.3	43.2	5.9	7.5	9.9	19.5	32.3

SpTy	# transits	200 hrs	200 hrs
dwarf	Per year	# transits	# years
G2	1	15.4	15.4
M0	6	37.2	6.7
M1	8	50.4	6.0
M2	11	59.5	5.4
M3	14	67.4	4.9
M4	13	59.4	4.5
M5	37	133.1	3.6
M6	61	187.8	3.1
M7	86	254.3	3.0
M8	108	287.8	2.7
M9	185	463.2	2.5

