Instructions for Using Uncle Al's Star Wheels

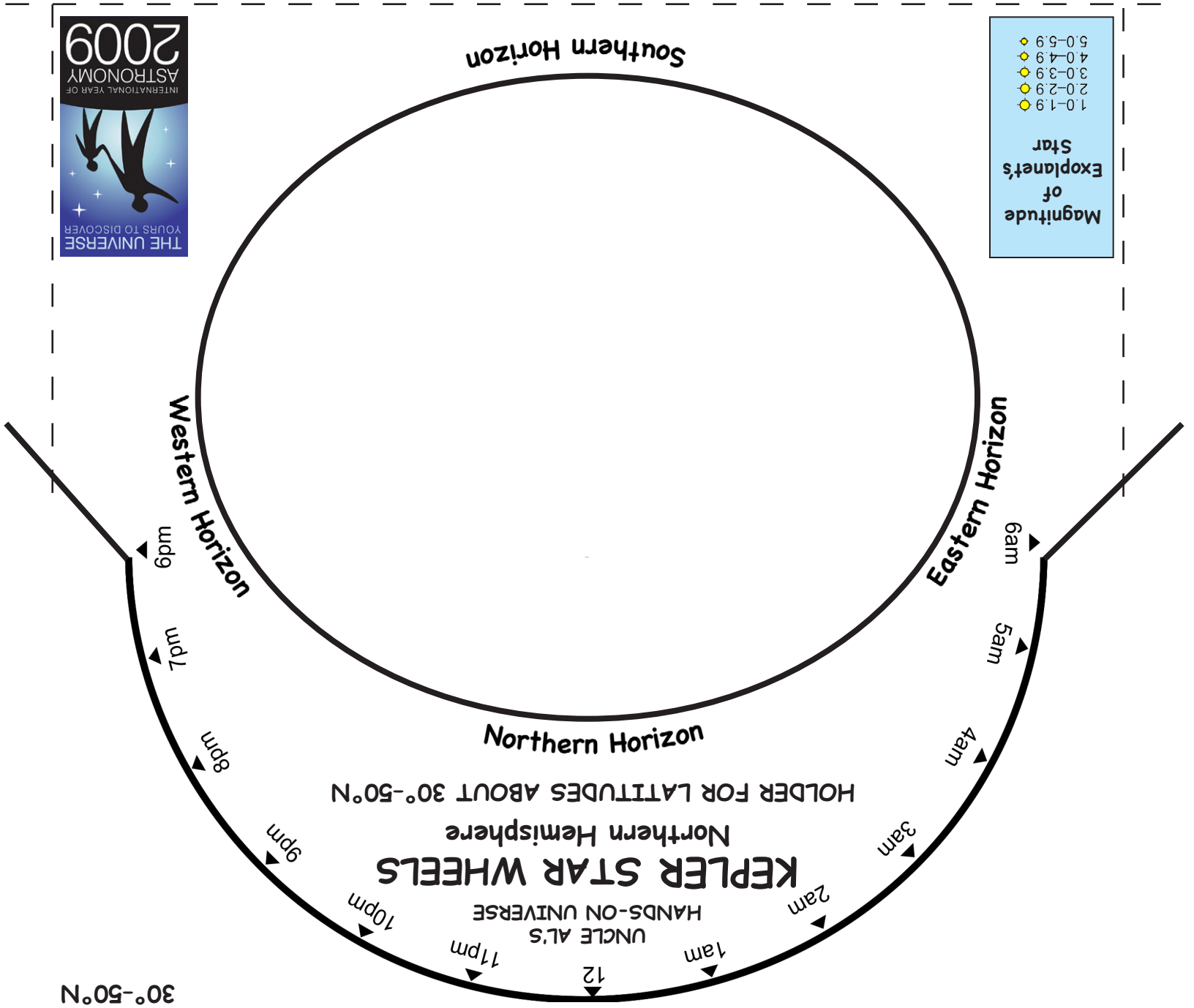
1. Align your date and time, and then look up at the sky
2. Locate the constellation you want to find on the map.
3. Turn your map so the horizon it is closest to is at the bottom.
4. The star positions in the sky should match those on the wheel.

Uncle Al's Star Wheels are based on LHS Sky Challengers created by Budd Wentz and available through LHS Museum Store510-642-1016 http://www.lhs.berkeley.edu/pass/ast110&111&121.html

Uncle'Al's Star Wheels - http://lhs.berkeley.edu/hou/img/uncleal

Kepler Star Wheel - http://kepler.nasa.gov/ed/skywheel

Version: August 2008



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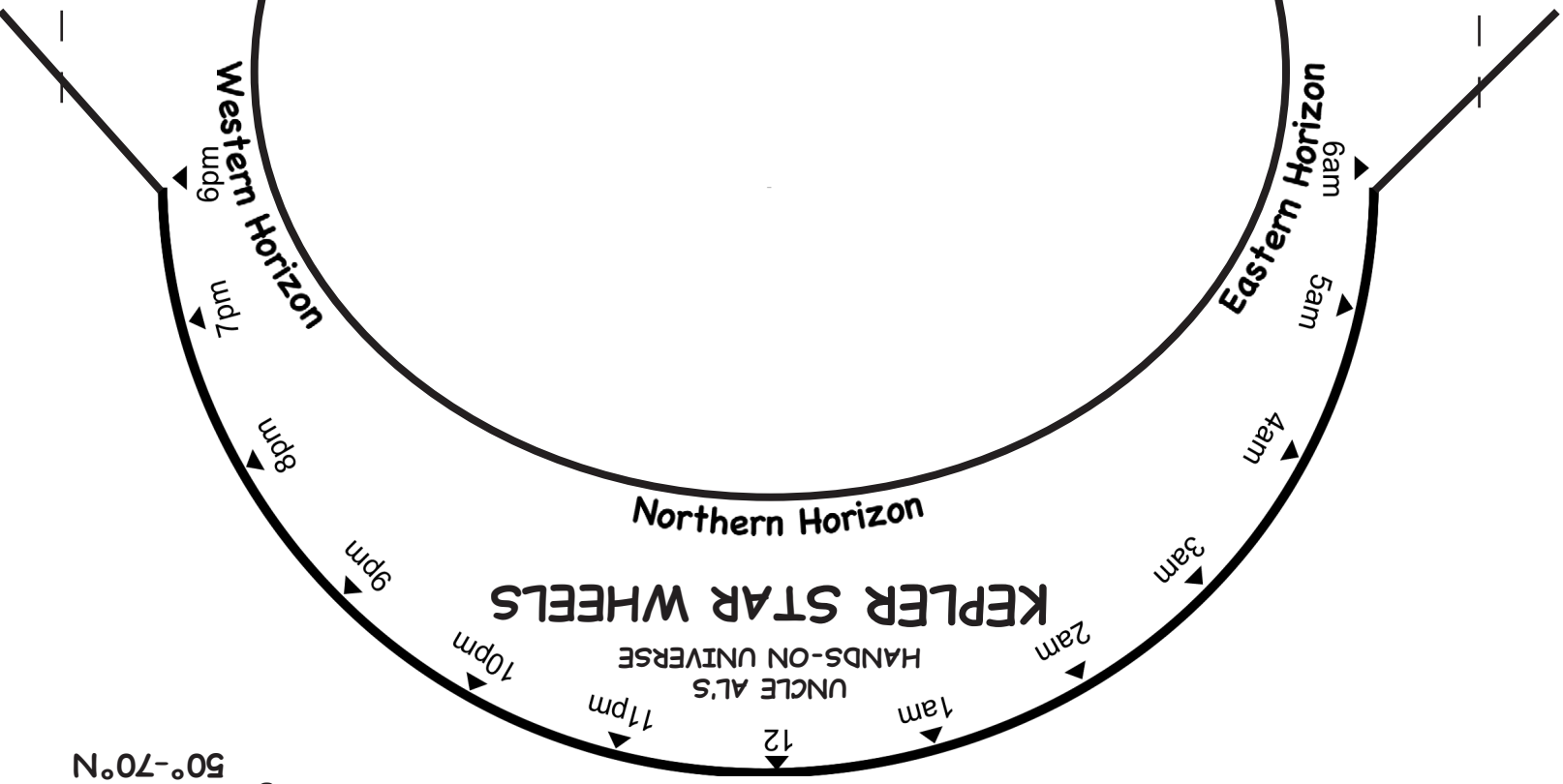
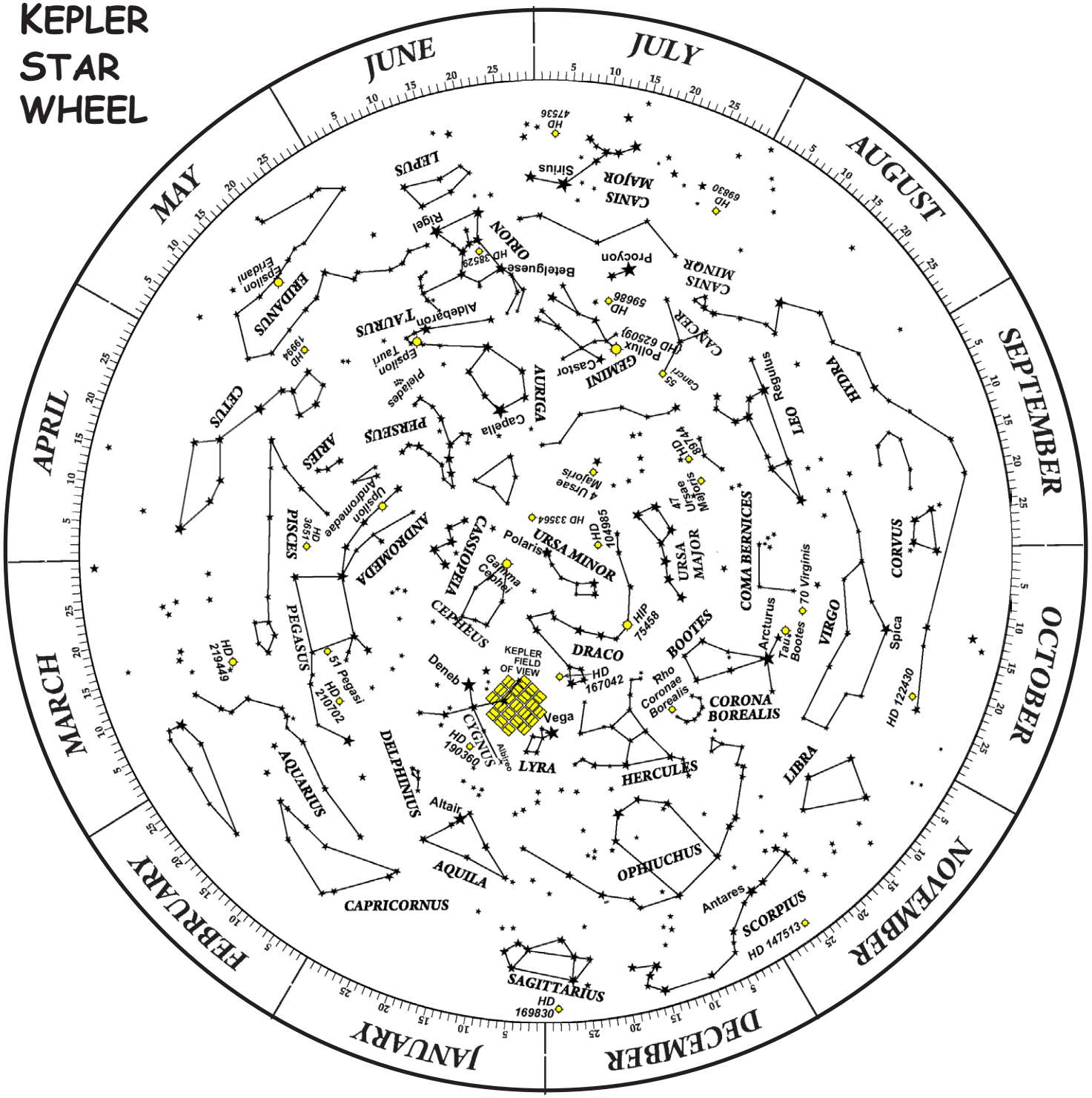
For Northern Hemisphere—High Latitudes
Southern Horizon
Magnitude of Exoplanet's Star
1.0–1.9
2.0–2.9
3.0–3.9
4.0–4.9
5.0–5.9
KEPLER STAR WHEELS
UNCLE AL'S HANDS-ON UNIVERSE
Northern Horizon
Western Horizon
Eastern Horizon
12 1am 2am 3am 4am 5am 6am 7pm 8pm 9pm 10pm 11pm
Star Wheel Holder for High Latitudes: 50°–70°N



KEPLER STAR WHEEL



INSTRUCTIONS FOR ASSEMBLING UNCLE AL'S STAR WHEELS

Step 1: Print out all pages either on heavy cardstock or paste them onto a file folder or any other sturdy piece of cardboard.

Step 2: Cut along the black outer circle of the Star Wheel and along the solid lines on the Star Wheel Holder. Remove the interior oval shape on the Star Wheel Holder.

Step 3: On the Star Wheel Holder, fold the cardboard along the dashed lines.

Step 4: Tape or staple along the edges of the Star Wheel Holder forming a pocket.

Step 5: Place the Star Wheel in the Star Wheel Holder.

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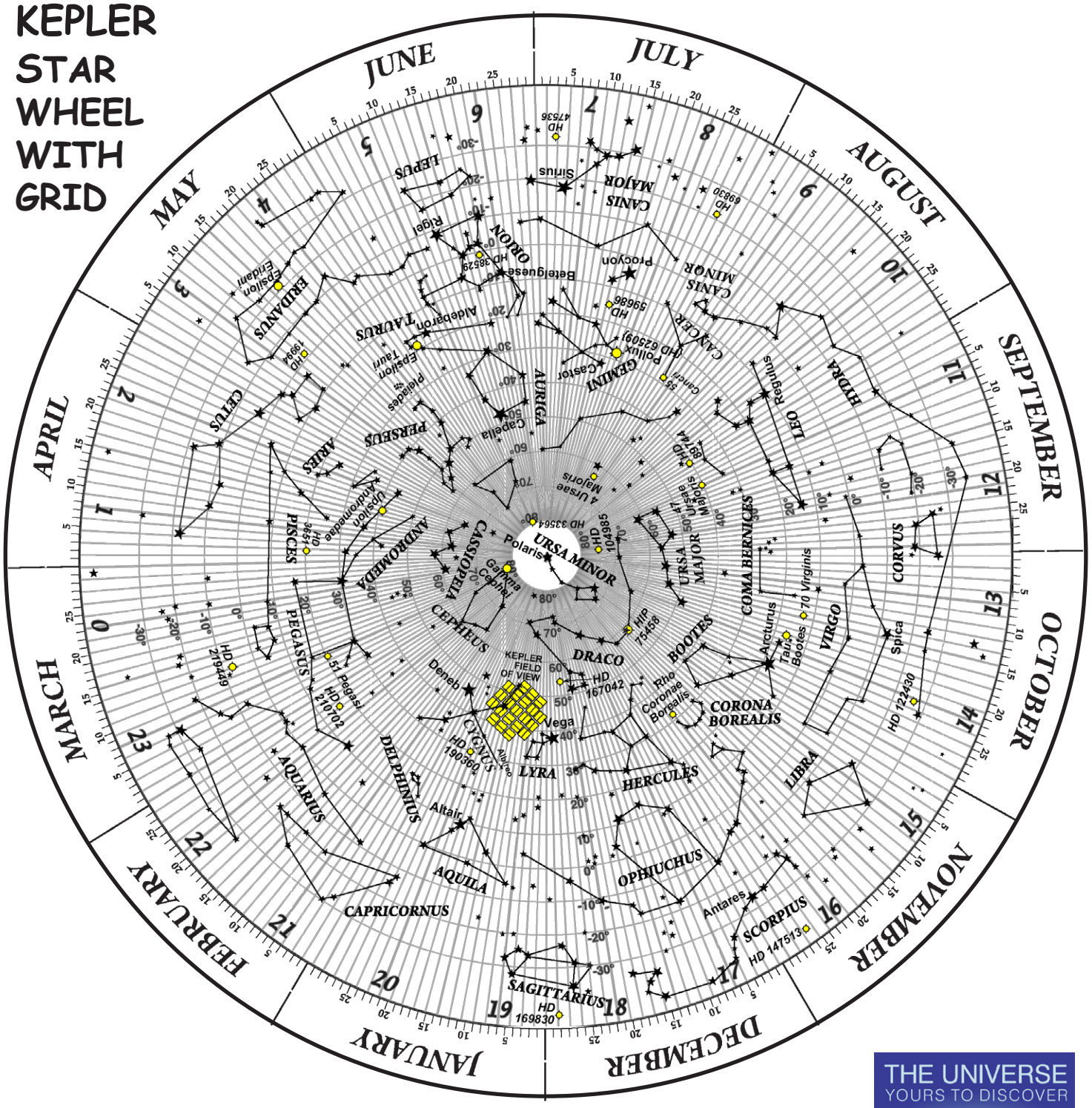
Uncle'Al's Star Wheels - http://lhs.berkeley.edu/hou/img/uncleal

Kepler Star Wheel - http://kepler.nasa.gov/ed/skywheel

Version:
August 2008

KEPLER STAR WHEEL WITH GRID



Version:
August 2008

Planets on the Kepler Star Wheel

in order of the brightness of the planet's star

Kepler Star Wheel constructed with data from Interactive Extra-solar Planets Catalog, maintained by Jean Schneider (CNRS-LUTH, Paris Observatory)
http://exoplanet.eu/catalog-all.php?mdAff=output#tc

	STAR			PLANET						STAR			
Planet Name	Mag. V	RA	DEC	Mass	Period	Semi-axis	Pl. Ecc.	Ang. Dist.	Distance	Spec. Type	Mass	St. [Fe/H]	Radius
HD 62509 b	1.15	07 45 18	+28 01 34	2.9	589.64	1.69	0.02	0.163443	10.34	K0IIIb	1.86	0.19	8.8
Gamma Cephei b	3.22	23 39 20	+77 37 56	1.6	902.9	2.044	0.115	0.17322	11.8	K2 V	1.4		6.2
HIP 75458 b	3.31	15 24 55	+58 57 57	8.82	511.098	1.275	0.7124	0.040476	31.5	K2 III	1.05	0.03	13.5
eps Tau b	3.53	04 28 37	+19 10 50	7.6	594.9	1.93	0.151	0.042889	45	K0 III	2.7	0.17	13.7
Epsilon Eridani b	3.73	03 32 55	-09 27 29	1.55	2502	3.39	0.702	1.059375	3.2	K2 V	0.83	-0.1	0.895
Ups And d	4.09	01 36 48	+41 24 38	3.95	1274.6	2.51	0.242	0.18634	13.47	F8 V	1.27	0.09	1.7
HD 219449 b	4.21	23 15 53	-09 05 15	2.9	182	0.3		0.006667	45	K0 III		-0.085	
HD 27442 b	4.44	04 16 29	-59 18 07	1.28	423.841	1.18	0.07	0.065193	18.1	K2 IV a	1.2	0.2	6.6
Tau Boo b	4.5	13 47 17	+17 27 22	3.9	3.3135	0.046		0.003067	15	F7 V	1.3	0.28	0.84
HD 11977 b	4.7	01 54 56	-67 38 50	6.54	711	1.93	0.4	0.029023	66.5	G8.5 III	1.91	-0.21	13
70 Vir b	5	13 28 26	+13 47 12	7.44	116.689	0.48	0.4	0.021818	22	G4 V	1.1	-0.03	1.86
HD 19994 b	5.07	03 12 46	-01 11 45	2	454	1.3	0.2	0.058	22.38	F8 V	1.35	0.23	0.81
HD 33564 b	5.08	05 22 33	+79 13 52	9.1	388	1.1	0.34	0.052431	20.98	F6 V	1.25	-0.12	1.1
47 Uma c	5.1	10 59 29	+40 25 46	1.34	2594	7.73		0.553329	13.97	G0V	1.03		1.24
HD 160691 e	5.15	17 44 08	-51 50 02	0.522	310.55	0.921	0.0666	0.060196	15.3	G3 IV-V	1.08	0.28	1.245
HD 47536 c	5.25	06 37 47	-32 20 23	7	2500				121.36	K1 III	0.94	-0.68	23.47
HD 147513 b	5.37	16 24 01	-39 11 34	1	540.4	1.26	0.52	0.098	12.9	G3/G5V	0.92	-0.03	1
HR 810 b	5.4	02 42 31	-50 48 12	1.94	311.288	0.91	0.24	0.05871	15.5	G0V pecul.	1.11	0.25	1.85
rho CrB b	5.4	16 01 03	+33 18 51	1.04	39.845	0.22	0.04	0.012622	17.43	G0V or G2V	0.99	-0.24	1.36
HD 59686 b	5.45	07 31 48	+17 05 09	5.25	303	0.911		0.009902	92	K2 III			
HD 122430 b	5.48	14 02 22	-27 25 47	3.71	344.95	1.02	0.68	0.007556	135	K3III	1.39	-0.05	22.9
51 Peg b	5.49	22 57 27	+20 46 07	0.468	4.23077	0.052		0.003537	14.7	G2 IV	1.11	0.2	1.17
HD 10647 b	5.52	01 42 29	-53 44 27	0.91	1040	2.1	0.18	0.121	17.3	F8V	1.07	-0.03	1.1
HD 39091 b	5.67	05 37 09	-80 28 08	10.35	2063.818	3.29	0.62	0.16	20.55	G1 IV	1.1	0.09	2.1
HD 142 b	5.7	00 06 19	-49 04 30	1	337.112	0.98	0.38	0.048	20.6	G1 IV	1.1	0.04	0.86
HD 190360 c	5.71	20 03 37	+29 53 48	0.057	17.1	0.128	0.01	0.008055	15.89	G6 IV	1.04	0.24	2.35
HD 89744 b	5.74	10 22 10	+41 13 46	7.99	256.605	0.89	0.67	0.022	40	F7 V	1.4	0.18	1.1
4 Uma b	5.79	08 40 13	+64 19 41	7.1	269.3	0.87	0.432	0.013945	62.39	K1III	1.234	-0.25	
HD 104985 b	5.79	12 05 15	+76 54 20	6.3	198.2	0.78	0.03	0.008	102	G9 III	1.5	-0.35	8.9
HD 3651 b	5.8	00 39 21	+21 15 01	0.2	62.23	0.284	0.63	0.025818	11	K0 V	0.79	0.05	0.87
HD 169830 c	5.9	18 27 49	-29 49 00	4.04	2102	3.6	0.33	0.099119	36.32	F8 V	1.4	0.21	1.84
HD 210702 b	5.93	22 11 51	+16 02 2	2	341.1	1.17	0.152	0.020893	56	K1III	1.85	0.12	4.72
HD 38529 c	5.94	05 46 34	+01 10 05	12.7	2174.3	3.68	0.36	0.087	42.43	G4 IV	1.39	0.313	2.58
HD 69830 d	5.95	08 18 23	-12 37 55	0.058	197	0.63	0.07	0.05	12.6	K0V	0.86	-0.05	0.895
55 Cnc f	5.95	08 52 37	+28 20 02	0.144	260	0.781	0.2	0.058284	13.4	G8 V	1.03	0.29	0.6
HD 167042 b	5.97	18 10 32	+54 17 12	1.6	416.1	1.3	0.03	0.026	50	K1III	1.64	0.05	4.3