

## Asteroid Occultation In Tulsa – July 9th 11:16 PM

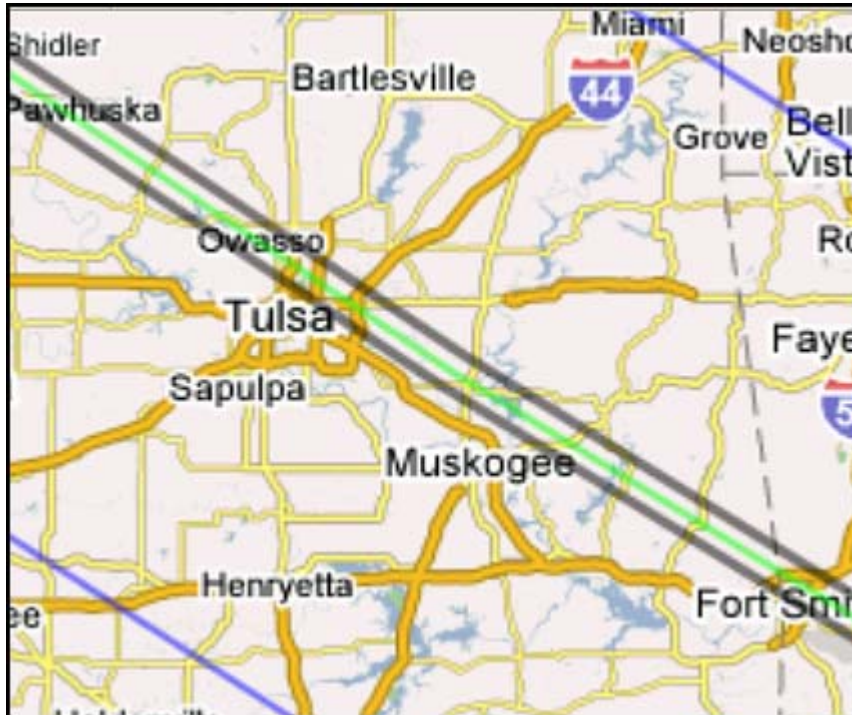
The asteroid Nausikaa should dim the star Hip 92988 by more than one magnitude for a up to 1.5 minutes.

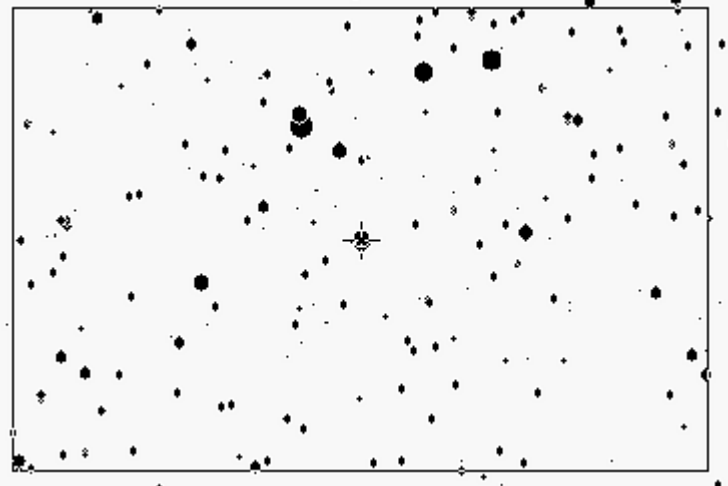
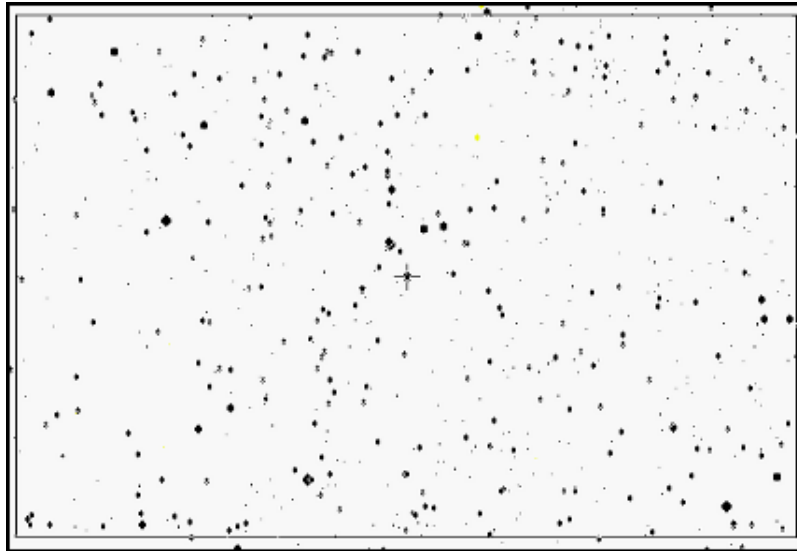
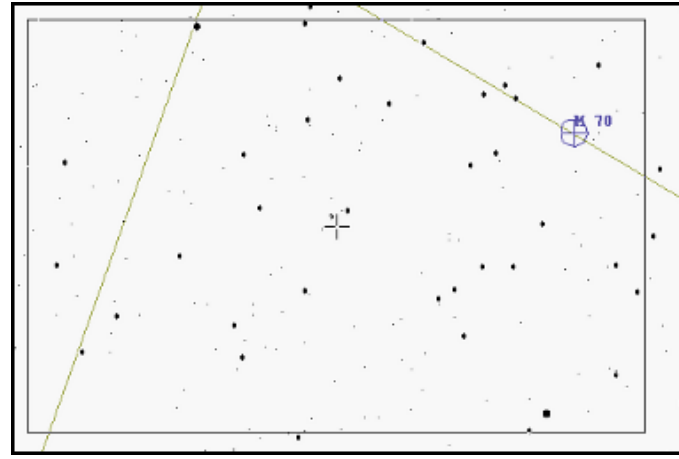
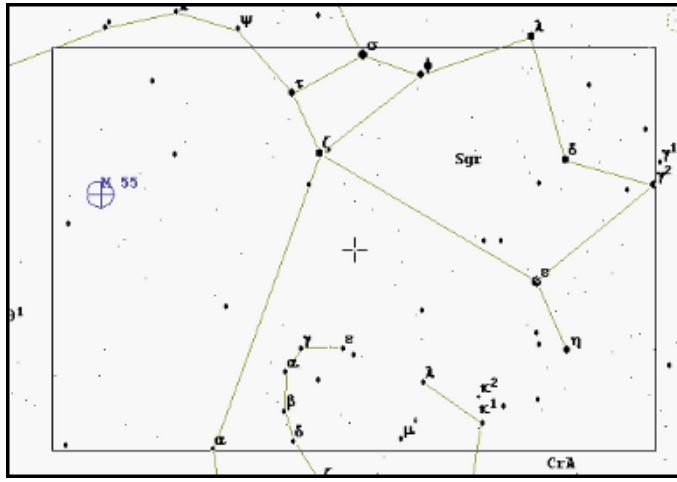
<u>Event Date/Time</u>	<u>Rank</u>	<u>Asteroid</u>	<u>Star</u>	<u>Visibility</u>	<u>dM D A</u>	<u>Comments</u>
<b>10 Jul 2007</b> , 04:16 UT	99	(192) Nausikaa mag 9.9	HIP 92988 mag 8.7	E USA	1.5m 10.7s 29°	

Explanation of observing and recording an occultation

[http://www.asteroidoccultation.com/asteroid\\_help.htm#deltaM](http://www.asteroidoccultation.com/asteroid_help.htm#deltaM)

Ground track of centerline and margin of error







IOTA/IOTA-ES occultation update for  
(192) Nausikaa / HIP 92988 event on 2007 Jul 10, 04:16 UT  
Visible from E USA  
[http://www.asteroidoccultation.com/2007\\_07/0710\\_192\\_8732\\_Summary.txt](http://www.asteroidoccultation.com/2007_07/0710_192_8732_Summary.txt)

#### Summary

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On 2007 Jul 10 UT, the 103 km diameter asteroid (192) Nausikaa will occult a 8.7 mag star in the constellation Sagittarius for observers along a path across E USA.

In the case of an occultation, the combined light of the asteroid and the star will drop by 1.5 mag to 9.9 mag (the magnitude of the asteroid) for at most 10.7 seconds.

This update is based on UNSO/Flagstaff astrometry for the asteroid kindly provided by Alice Monet, historical astrometry from the MPC files (via AstDys), and the following catalogs for the star position: .

#### The event at a glimpse

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- \* Rank: 99
- \* date and approx. time of event: 2007 Jul 10, 04:11 - 2007 Jul 10, 04:22 UT
- \* midpoint of event [JD]: 2454291.678475
- \* magnitude of target star: 8.7
- \* magnitude drop [mag]: 1.5
- \* estimated maximum duration [s]: 10.7
- \* Moon: 22 % sunlit, 129° distance
- \* Sun: 168° distance
- \* rough path description: E USA

#### The occultation path

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- \* approximate projected width [km]: 215
- \* 1 sigma uncertainty interval [path widths]: +/- 0.22
- \* 1 sigma uncertainty interval [seconds]: +/- 2.9
- \* 1 sigma uncertainty interval approx RA,DE ["]: (+/- .037 +/- .025)
- \* 1 sigma uncertainty ellipse (major, minor, PA): ( .037", .025", 87° )
- \* approx speed of asteroid's shadow [km/s]: 9.5965
- \* website for maps:  
<http://lunar-occultations.com/iota/asteroids/astrndx.htm>  
<http://www.asteroidoccultation.com>

Path Coordinates:

Occultation of HIP 92988 by 192 Nausikaa on 2007 Jul 10

E. Longitude o ' "	Centre		U.T. h m s	Star	Star	Sun	Path Limits				Error Limits			
	Latitude o ' "			Alt o	Az o	Alt o	Limit 1		Limit 2		Limit 3		Limit 4	
							Longitude o ' "		Longitude o ' "		Longitude o ' "		Longitude o ' "	
-111 41 17	48 0 0	4 22 16	0	145	-8	-109 51 6	...	...	...	-109 1 26	...	...	...	
-110 38 30	47 0 0	4 22 16	1	146	-9	-108 48 13	...	...	...	-107 58 28	...	...	...	
-109 33 13	46 0 0	4 22 15	3	147	-10	-107 42 36	...	...	...	-106 52 38	...	...	...	
-108 25 16	45 0 0	4 22 13	4	148	-12	-106 34 3	-110 12 38	-105 43 45	...	...	...	...	...	
-107 14 28	44 0 0	4 22 11	5	149	-13	-105 22 22	-109 2 31	-104 31 37	...	...	...	...	...	
-106 0 37	43 0 0	4 22 7	7	150	-14	-104 7 19	-107 49 36	-103 15 56	-108 36 19					
-104 43 26	42 0 0	4 22 3	8	150	-16	-102 48 35	-106 33 40	-101 56 24	-107 20 51					
-103 22 36	41 0 0	4 21 58	9	151	-17	-101 25 47	-105 14 26	-100 32 35	-106 2 14					
-101 57 46	40 0 0	4 21 52	11	152	-19	-99 58 29	-103 51 36	-99 4 2	-104 40 10					
-100 28 26	39 0 0	4 21 45	12	153	-20	-98 26 7	-102 24 45	-97 30 5	-103 14 16					
-98 54 3	38 0 0	4 21 37	13	155	-22	-96 47 57	-100 53 25	-95 49 58	-101 44 6					
-97 13 52	37 0 0	4 21 27	15	156	-23	-95 3 4	-99 17 1	-94 2 38	-100 9 7					
-95 26 57	36 0 0	4 21 16	16	157	-25	-93 10 13	-97 34 47	-92 6 39	-98 28 39					
-93 32 2	35 0 0	4 21 3	18	158	-26	-91 7 42	-95 45 46	-90 0 2	-96 41 49					
-91 27 23	34 0 0	4 20 48	19	160	-28	-88 53 2	-93 48 39	-87 39 49	-94 47 29					
							Latitude	Latitude	Latitude	Latitude				
-91 0 0	33 47 31	4 20 45	20	160	-28	34 56 24	32 41 26	35 27 43	32 13 9					
-90 0 0	33 21 0	4 20 37	20	161	-29	34 29 4	32 15 39	34 59 59	31 47 40					
-89 0 0	32 55 39	4 20 29	21	162	-30	34 2 57	31 50 59	34 33 30	31 23 17					
-88 0 0	32 31 28	4 20 21	22	163	-31	33 38 2	31 27 26	34 8 14	30 59 59					
-87 0 0	32 8 24	4 20 13	22	163	-31	33 14 18	31 4 58	33 44 10	30 37 46					
-86 0 0	31 46 27	4 20 5	23	164	-32	32 51 43	30 43 35	33 21 17	30 16 36					
-85 0 0	31 25 36	4 19 56	23	165	-33	32 30 18	30 23 16	32 59 35	29 56 30					
-84 0 0	31 5 51	4 19 48	24	166	-33	32 10 0	30 4 0	32 39 1	29 37 27					
-83 0 0	30 47 12	4 19 39	24	167	-34	31 50 49	29 45 48	32 19 36	29 19 26					
-82 0 0	30 29 36	4 19 30	25	167	-34	31 32 45	29 28 38	32 1 18	29 2 26					
-81 0 0	30 13 4	4 19 21	25	168	-35	31 15 47	29 12 30	31 44 8	28 46 28					
-80 0 0	29 57 36	4 19 12	26	169	-36	30 59 54	28 57 23	31 28 3	28 31 30					
-79 0 0	29 43 10	4 19 2	26	170	-36	30 45 6	28 43 18	31 13 4	28 17 33					
-78 0 0	29 29 47	4 18 53	27	171	-36	30 31 22	28 30 13	30 59 10	28 4 36					
-77 0 0	29 17 25	4 18 44	27	172	-37	30 18 42	28 18 8	30 46 21	27 52 39					
-76 0 0	29 6 5	4 18 34	27	173	-37	30 7 4	28 7 4	30 34 35	27 41 40					
-75 0 0	28 55 46	4 18 25	27	173	-38	29 56 30	27 56 59	30 23 54	27 31 41					

- 74	0	0	28 46 28	4 18 15	28	174	-38	29 46 58	27 47 53	30 14 15	27 22 40
- 73	0	0	28 38 10	4 18 5	28	175	-38	29 38 28	27 39 47	30 5 39	27 14 38
- 72	0	0	28 30 52	4 17 56	28	176	-39	29 30 59	27 32 39	29 58 6	27 7 35
- 71	0	0	28 24 35	4 17 46	28	177	-39	29 24 33	27 26 30	29 51 35	27 1 29
- 70	0	0	28 19 17	4 17 36	28	178	-39	29 19 8	27 21 19	29 46 6	26 56 21
- 69	0	0	28 14 59	4 17 26	28	179	-39	29 14 44	27 17 7	29 41 39	26 52 11
- 68	0	0	28 11 41	4 17 17	29	180	-39	29 11 21	27 13 53	29 38 14	26 48 59
- 67	0	0	28 9 22	4 17 7	29	181	-40	29 8 58	27 11 37	29 35 50	26 46 45
- 66	0	0	28 8 3	4 16 57	29	182	-40	29 7 37	27 10 19	29 34 28	26 45 28
- 65	0	0	28 7 43	4 16 47	29	182	-40	29 7 17	27 10 0	29 34 8	26 45 8
- 64	0	0	28 8 22	4 16 37	28	183	-40	29 7 57	27 10 38	29 34 48	26 45 46
- 63	0	0	28 10 1	4 16 28	28	184	-40	29 9 39	27 12 15	29 36 31	26 47 22
- 62	0	0	28 12 40	4 16 18	28	185	-40	29 12 21	27 14 50	29 39 15	26 49 55
- 61	0	0	28 16 17	4 16 8	28	186	-40	29 16 4	27 18 22	29 43 1	26 53 26
- 60	0	0	28 20 55	4 15 58	28	187	-39	29 20 49	27 22 54	29 47 49	26 57 55
- 59	0	0	28 26 32	4 15 49	28	188	-39	29 26 34	27 28 24	29 53 38	27 3 21
- 58	0	0	28 33 10	4 15 39	28	189	-39	29 33 22	27 34 52	30 0 30	27 9 46
- 57	0	0	28 40 47	4 15 30	27	190	-39	29 41 11	27 42 19	30 8 25	27 17 9
- 56	0	0	28 49 26	4 15 20	27	191	-39	29 50 2	27 50 46	30 17 22	27 25 31
- 55	0	0	28 59 4	4 15 11	27	191	-38	29 59 55	28 0 11	30 27 22	27 34 51
- 54	0	0	29 9 44	4 15 2	26	192	-38	30 10 51	28 10 36	30 38 26	27 45 10
- 53	0	0	29 21 26	4 14 52	26	193	-38	30 22 51	28 22 2	30 50 34	27 56 28
- 52	0	0	29 34 9	4 14 43	26	194	-37	30 35 54	28 34 27	31 3 46	28 8 46
- 51	0	0	29 47 54	4 14 34	25	195	-37	30 50 0	28 47 53	31 18 3	28 22 4
- 50	0	0	30 2 42	4 14 25	25	196	-36	31 5 12	29 2 20	31 33 26	28 36 23
- 49	0	0	30 18 33	4 14 17	24	196	-36	31 21 28	29 17 48	31 49 55	28 51 42
- 48	0	0	30 35 28	4 14 8	24	197	-36	31 38 51	29 34 19	32 7 30	29 8 2
- 47	0	0	30 53 27	4 14 0	23	198	-35	31 57 19	29 51 51	32 26 13	29 25 24
- 46	0	0	31 12 32	4 13 51	23	199	-34	32 16 55	30 10 27	32 46 3	29 43 48
- 45	0	0	31 32 41	4 13 43	22	200	-34	32 37 39	30 30 6	33 7 3	30 3 15
- 44	0	0	31 53 57	4 13 35	21	200	-33	32 59 31	30 50 49	33 29 13	30 23 44
- 43	0	0	32 16 20	4 13 27	21	201	-33	33 22 33	31 12 37	33 52 34	30 45 18
- 42	0	0	32 39 50	4 13 19	20	202	-32	33 46 45	31 35 31	34 17 6	31 7 57
- 41	0	0	33 4 29	4 13 12	19	203	-31	34 12 9	31 59 30	34 42 52	31 31 40
- 40	0	0	33 30 18	4 13 5	19	203	-31	34 38 46	32 24 37	35 9 51	31 56 30
- 39	0	0	33 57 18	4 12 58	18	204	-30	35 6 36	32 50 51	35 38 6	32 22 26
- 38	0	0	34 25 29	4 12 51	17	205	-29	35 35 41	33 18 14	36 7 38	32 49 29
- 37	0	0	34 54 52	4 12 44	16	205	-28	36 6 3	33 46 47	36 38 29	33 17 41

- 36	0	0	35 25 30	4 12 38	16	206	-27	36 37 43	34 16 30	37 10 39	33 47 3
- 35	0	0	35 57 23	4 12 32	15	207	-27	37 10 43	34 47 25	37 44 12	34 17 34
- 34	0	0	36 30 32	4 12 26	14	208	-26	37 45 4	35 19 32	38 19 8	34 49 17
- 33	0	0	37 5 0	4 12 21	13	208	-25	38 20 48	35 52 53	38 55 30	35 22 12
- 32	0	0	37 40 47	4 12 16	12	209	-24	38 57 57	36 27 30	39 33 20	35 56 20
- 31	0	0	38 17 56	4 12 11	11	210	-23	39 36 34	37 3 23	40 12 41	36 31 43
- 30	0	0	38 56 27	4 12 6	10	210	-22	40 16 41	37 40 34	40 53 35	37 8 22
- 29	0	0	39 36 24	4 12 2	9	211	-21	40 58 21	38 19 5	41 36 7	37 46 19
- 28	0	0	40 17 49	4 11 59	8	212	-20	41 41 37	38 58 56	42 20 19	38 25 34
- 27	0	0	41 0 44	4 11 55	7	212	-19	42 26 32	39 40 11	43 6 15	39 6 10
- 26	0	0	41 45 11	4 11 52	6	213	-18	43 13 9	40 22 50	43 54 0	39 48 7
- 25	0	0	42 31 14	4 11 50	5	214	-17	44 1 35	41 6 57	44 43 39	40 31 29
- 24	0	0	43 18 55	4 11 48	4	214	-16	44 51 52	41 52 33	45 35 18	41 16 17
- 23	0	0	44 8 20	4 11 46	3	215	-15	45 44 8	42 39 40	46 29 4	.. .. .
- 22	0	0	44 59 31	4 11 45	2	216	-14	46 38 28	43 28 23	47 25 5	.. .. .
- 21	0	0	45 52 34	4 11 44	1	216	-13	.. .. .	.. .. .	.. .. .	.. .. .

Data for the target star

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* name: HIP 92988
* constellation : Sagittarius
* J2000 position with proper motion to date of event [h,m,s ; °,',"]
  RA: 18 56 38.7819  DE: -33 26 54.399
* position source: mpos:HIP pm:HIP plx:HIP
* standard error: RA,DE ["]: ( .026, .018 )
* V mag [mag]: 8.7
* B mag [mag]: 10.1
* Apparent position with proper motion
  RA(deg): 284.2938296453  DE(deg): -33.4396970214
* Equation of equinoxes (radians) : 0.000028153925892
* remarks:

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Data for the minor planet

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* general information:
  (number) name: (192) Nausikaa
  approx. diameter [km]: 103
  approx. diameter ["]: .114
  distance from Earth [AU]: 1.24500

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\* orbital information:  
orbit source: Preston  
date of fit: 2007 Jun 02  
source of used astrometry: FASTT MPC (via Astdys)  
number of used observations: 1147  
number of rejected observations: 147  
time covered by the observations: 1907 Nov 05 - 2007 May 21  
1 sigma uncertainty ellipse (major, minor, PA): 0.026, 0.017, 84°  
remarks:

\* orbital elements for (192) Nausikaa :  
Mean anomaly = 298.73007163 deg  
Arg. of pericenter = 30.02812819 deg  
Long. of node = 343.31567646 deg  
Inclination = 6.81502243 deg  
Eccentricity = 0.24568268  
Semimajor axis = 2.40353066 AU  
Perihelion dist = 1.81302482 AU  
Mag: H = 7.08, G = 0.03  
Epoch of elements : MJD 54291.17800000 TDT  
(2007 Jul 10.178)

----- occlmnt file for Occult BEGIN -----  
2007 Jul 10  
192 Nausikaa  
4h 17.0m UT  
8.7 18 56 38.782-33 26 54.40HIP 92988 10.1  
9.9 103 10.7 1.245 -3.057 0.92  
-67.807 -33.447 -242.93 22.28  
4.2834 .02079 .87736 -5.41500 0.12839 0.00038 0.00101  
2000 298.4184882007 7 9.00000 30.028128343.315676 6.8150220.245682682.403530661.813024827.135 0.03  
RATE 2.6450230 .0000000 .0000000 .0000000 .00000000 .00000000 .00000000  
Meas 0.037 0.025 87.0 1.220 0.025  
----- occlmnt file for Occult END -----

=====  
Calculator (s): Steve Preston  
Date of update: 2007 Jun 06, 20:17 UT

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425-688-9965

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