WEST VIRGINIA UNIVERSITY
EBERLY COLLEGE OF ARTS AND SCIENCES
THE DEPARTMENT OF PHYSICS
TOMCHIN PLANETARIUM AND OBSERVATORY

Mountaineer Skies

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From the Editor's Desk

If all goes well, we should have a spectacular event on July 4th. NASA has sent a spacecraft, Deep Impact, to collide with Comet Tempel 1. (See article on page 2). Currently, the estimated time of impact is early on July 4, 2005 EDT.

The Autumnal Equinox, or the first day of autumn, will be Thursday, September 22, this year and first day of winter will occur on Wednesday, December 21.

The Perseid meteor shower, usually just called the Perseids , will be manifest from July 17 to August 24 with its maximum on August 12 when 100 per hour are expected.

Most meteor showers are normally associated with a comet. The Peresids are no exception. Comet 109P/Swift-Tuttle is the source of the debris that makes up the meteors we see during this annual shower.

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Rise and Set Times

Beginning of July, 2005

	Const	Rise	Transit	Set	Mag
Sun		05:56	13:24	20:51	-26.8
Mercury	Cnc	7:59	15:10	22:24	0.2
Venus	Cnc	7:53	15:08	22:25	-3.9
Mars	Psc	1:20	7:32	13:46	-0.1
Jupiter	Vir	13:25	19:18	1:11	-2.1
Saturn	Cnc	7:22	14:41	21:57	2.1

Beginning of August, 2005

	Const	Rise	Transit	Set	Mag
Sun		6:20	13:26	20:32	-26.8
Mercury	Cnc	7:03	13:49	20:28	4.0
Venus	Leo	9:03	15:32	22:03	-3.9
Mars	Psc	0:07	6:42	13:19	-0.5
Jupiter	Vir	11:37	17:29	23:17	-1.9
Saturn	Cnc	5:40	12:56	20:08	2.0

Beginning of September, 2005

	Const	Rise	Transit	Set	Mag
Sun		6:49	13:20	19:51	-26.8
Mercury	Leo	5:36	12:25	19:18	-1.1
Venus	Vir	10:07	15:44	21:22	-4.0
Mars	Ari	22:45	5:37	12:31	-1.0
Jupiter	Vir	10:02	15:46	21:27	-1.8
Saturn	Cnc	3:57	11:06	18:19	2.0

Ari	Aries, The Ram
Cnc	Cancer, The Crab
Leo	The Lion
Psc	Pisces, The Fishes
Vir	Virgo, The Maiden

About: **Deep Impact to Comet Tempel 1 on July 4th**

NASA is going to provide some really spectacular fireworks for us this Fourth of July. Designed to investigate the composition of a comet below its surface, a dual space craft called **Deep Impact** was launched on January 12, 2005, and is scheduled to arrive at **Comet Tempel 1** on Independence Day this year. The arrival will be very dramatic as one of the space craft, the impactor, will crash into Comet Tempe 1 leaving a large crater roughly the size of a football field in diameter and 100 feet deep. These sizes are estimates; the actual crater size will depend upon both the composition and the density of the comet. The impactor spacecraft will be followed fifteen minutes later by the flyby spacecraft to record the event and send back images to Earth. There is a chance that sunlight reflecting from the material kicked up by the collision will cause the comet to become noticeably lighter and brighter.

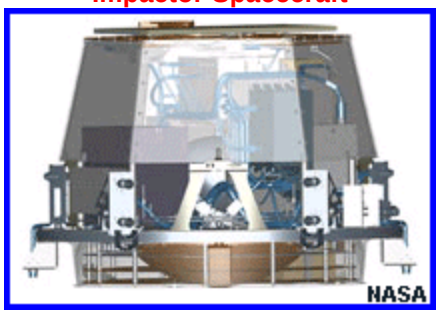
Comet Tempel 1

I am sure you have heard of a comet, but what is it? A comet has been characterized as a "dirty snowball". It is made up primarily of water ice with some gas and solid material that we think are particles of the material that was around when the solar system was born, about 4.5 billion years ago. It moves around the sun at predictable intervals. Comet Halley has an orbital period of 76 years while Comet Tempel 1 has a much shorter period of about 5.5 years. Its orbit takes it between Mars and Jupiter.

The Spacecraft

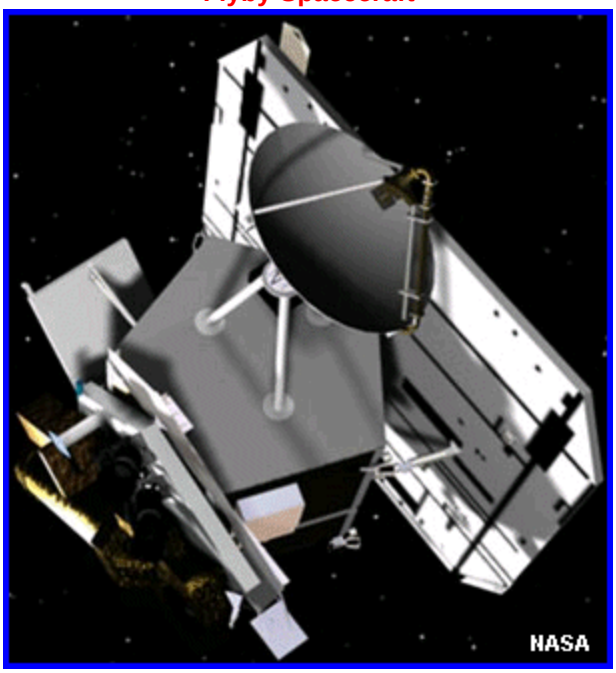
The **impactor spacecraft** is about 3 feet wide and 2 feet high, weights 820 pounds, and will be traveling at 23,000 miles per hour at impact. It is tasked with penetrating the atmosphere and making a crater deep enough to allow us to see into the nucleus of Tempel 1. Twenty- four hours before impact the impactor will be released from the flyby spacecraft. It will continue to take pictures until it collides with the comet.

Impactor Spacecraft



The **flyby spacecraft** is designed to follow the impactor spacecraft, take picuters as it collides with Comet Tempel 1, and send back data to Earth.

Flyby Spacecraft



NASA Mission Objectives

1. **Observe how the crater forms**
2. **Measure the crater's depth and diameter**
3. **Measure the composition of the interior of the crater and its ejecta**
4. **Determine the changes in natural outgassing produced by the impact**

2005 Planetarium Shows

July – Closed	August 26 *Hubble Vision 2*	September 9 & 23 *Hubble Vision 2*

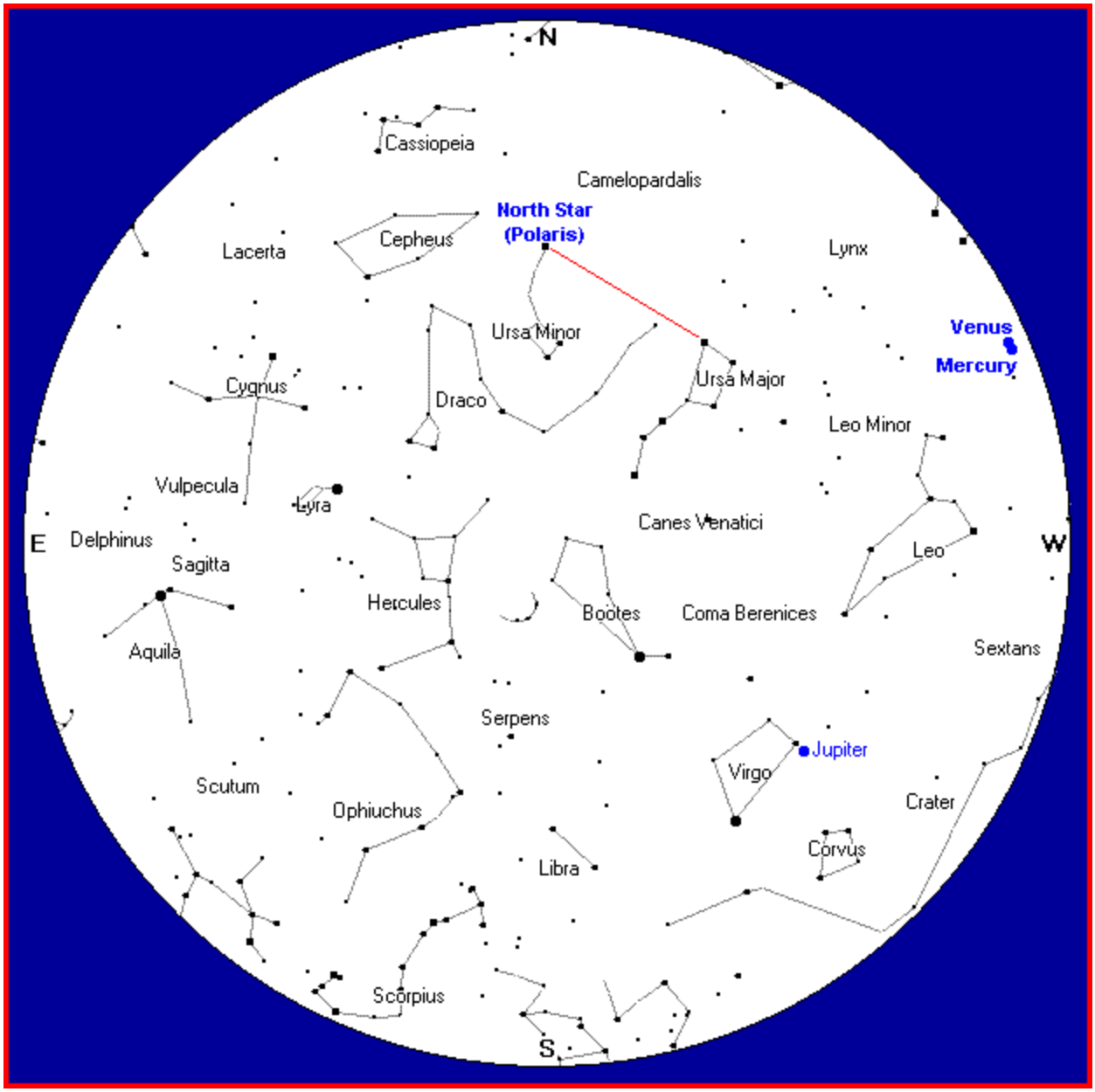
For those who are interested in bringing a group, such as schools or scouts, during the day, please call for more information. These shows are usually given on Tuesday or Thursday mornings.

For further information or reservations, please call John Hopkins at (304)293-3422, extension 1443 or by email at: jhopkins@mail.wvu.edu

Selected Sunrise/Sunset and Moon Rise/Moon Set Times (2005)

Date	Sunrise	Sunset	Moon Rise	Moon Set	Moon Phase
July 6	5:58 A.M.	8:50 P.M.	5:40 A.M.	9:33 P.M.	New Moon
July 14	6:03 A.M.	8:47 P.M.	1:48 P.M.	12:30 A.M.	First Qtr
July 21	6:09 A.M.	8:42 P.M.	9:29 P.M.	5:54 P.M.	Full Moon
July 27	6:14 A.M.	8:38 P.M.	NA	1:29 P.M.	Last Qtr
Aug 4	6:21 A.M.	8:30 P.M.	5:33 A.M.	8:43 P.M.	New Moon
Aug 12	6:28 A.M.	8:20 P.M.	1:51 P.M.	11:50 P.M.	First Qtr
Aug 19	6:35 A.M.	8:11 P.M.	8:33 P.M.	6:07 A.M.	Full Moon
Aug 26	6:41 A.M.	8:01 P.M.	11:53 P.M.	2:40 P.M.	Last Qtr
Sept 3	6:49 A.M.	7:48 P.M.	6:30 A.M.	8:01 P.M.	New Moon
Sept 11	6:56 A.M.	7:35 P.M.	3:12 P.M.	11:59 P.M.	First Qtr
Sept 17	7:02 A.M.	7:26 P.M.	7:26 P.M.	6:15 A.M.	Full Moon
Sept 25	7:09 A.M.	7:13 P.M.	NA	3:26 P.M.	Last Qtr

July 2005 Sky Chart* for:
10:00 P.M at the beginning of the month
9:00 P.M in the middle of the month
8:00 P.M at the end of the month



*Sky Chart used with the kind permission of **Heavens-Above** at **http://www.heavens-above.com/**

The TOMCHIN PLANETARIUM is named in honor of the late Harold Tomchin, of Princeton, W.Va., who made a generous donation to ensure its continuing operation, and whose family continues to support the planetarium for the educational benefit of WVU students, staff, and faculty members, as well as the local community. Contributions can be made in support of the planetarium through the WVU Planetarium Project at the WVU Foundation, Inc., phone (304)284-4000. Thank You.

Edited by John Hopkins
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