Astronomy & Wikipedia

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9 January 2013

Questions

Questions

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Questions

How many of you:

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Questions

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Stats for October 2012 - see http://reportcard.wmflabs.org/

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Over **23.7 million articles**

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Written in over **270 different languages**

Now nearly **12 years old**
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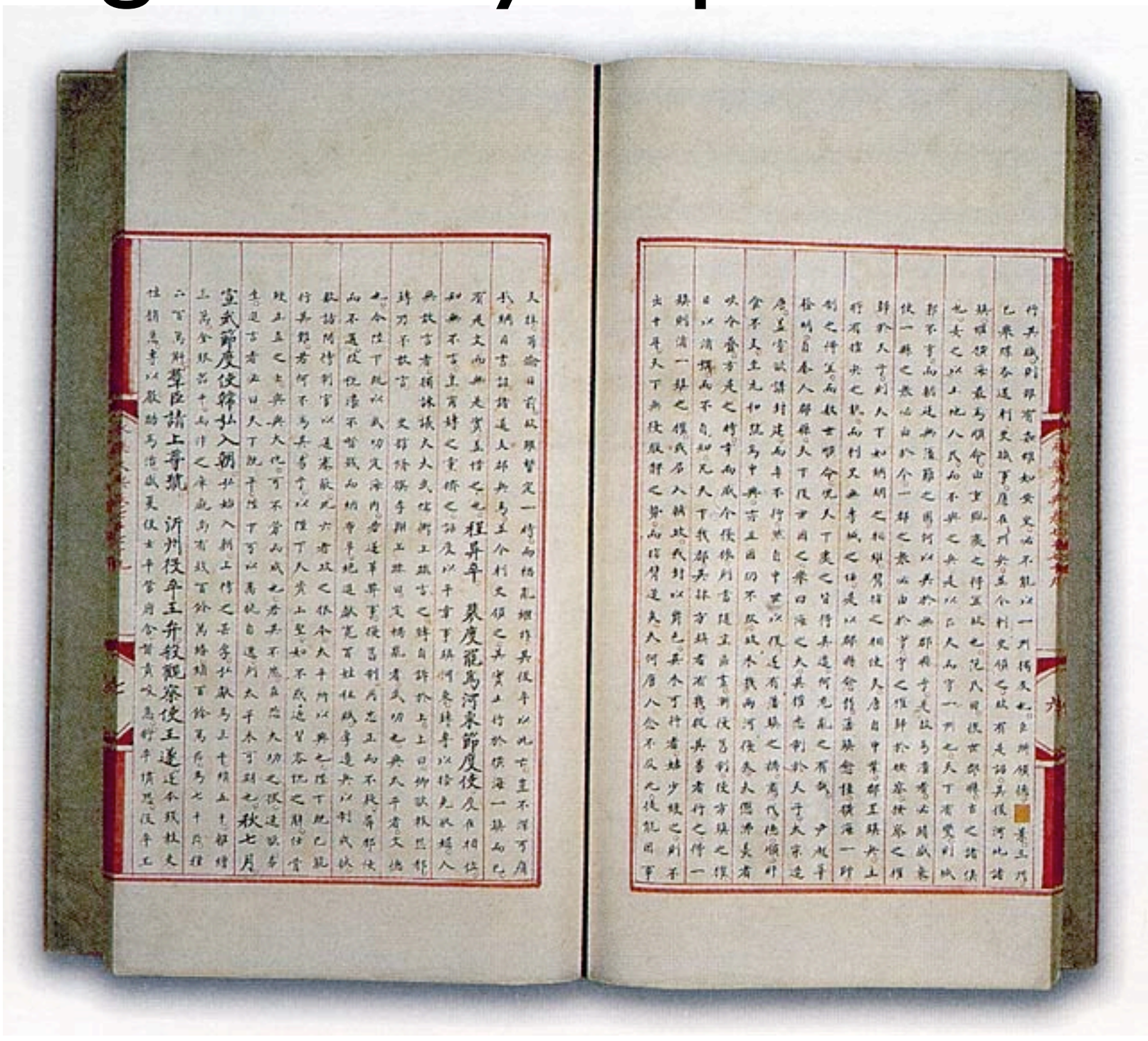

Bigger than 11,095-volume 永樂大典/Yongle Encyclopedia from 1403-8

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the free encyclopedia that anyone can edit.

4,139,248 articles in English

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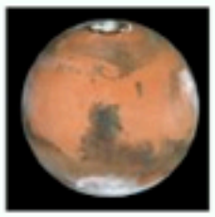

The recorded **history of Mars observation** dates back to the era of the ancient Egyptian astronomers in the 2nd millennium BCE. Detailed observations of the position of Mars were made by Babylonian astronomers, and ancient Greek philosophers and Hellenistic astronomers developed a geocentric model to explain the planet's motions. Indian and Islamic astronomers estimated its size and distance from Earth. The first telescopic observation of Mars was by Galileo Galilei in 1610. The first crude map of Mars was published in 1840. When astronomers mistakenly thought they had detected the spectroscopic signature of water in the Martian atmosphere, the idea of life on Mars became popular. During the 1920s, the range of Martian surface temperature was measured; it ranged from –85 °C (–121 °F) to 7 °C (45 °F). The planetary atmosphere was found to be arid with only trace amounts of oxygen and water. Since the 1960s, multiple robotic spacecraft have been sent to explore Mars. The planet has remained under observation by ground and space-based instruments and the discovery of meteorites on Earth that originated on Mars has allowed laboratory examination of the chemical conditions on the planet. (**Full article...**)

Recently featured: *Psittacosaurus* – *The Covent-Garden Journal* – Kenneth Walker

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Did you know...

From Wikipedia's newest content:

- ... that the nudibranch ***Flabellina verrucosa*** *(pictured)* incorporates stinging cells from its prey into its own tissues?
- ... that after **Akari Hayami** left Momoiro Clover, the girl group changed its name to Momoiro Clover Z?
- ... that popular YouTube videos show 5-foot-11-inch (1.80 m) **Phil Pressey** dunking over people much taller than him?
- ... that an **Armenian Genocide Memorial was bombed** in a Paris suburb in 1984?
- ... that the television-based video game ***Family Guy Online*** will be shut down in January 2013?
- ... that **Sonrise Church** in Hillsboro, Oregon, is housed in a former Toshiba Ceramics America facility?
- ... that chef Heston Blumenthal sought to super-size food in his Channel 4 series ***Heston's***

In the news

- In association football, Lionel Messi wins the **2012 FIFA Ballon d'Or**.
- In ice hockey, the National Hockey League's owners reach a tentative agreement with the National Hockey League Players' Association to end the **2012–13 NHL lockout**.
- Switzerland's oldest bank, **Wegelin & Co.** *(headquarters pictured)*, announces it will close after being fined by U.S. authorities for enabling tax evasion.
- In chess, **Magnus Carlsen** achieves the highest FIDE rating of all time.
- At least 60 people are killed and 200 injured in **a stampede** after celebrations at Félix Houphouët-Boigny Stadium in Abidjan, Ivory Coast.
- Argentina, Australia, Luxembourg, Rwanda, and South Korea **join** the United Nations Security Council.

Recent deaths

Syrian civil war – **Wikinews** – **More current events...**

On this day...

January 8: **Kim Jong-un's Birthday** in North Korea

- 1198 – After Lotario de Conti was elected as **Pope Innocent III**, his first act was the restoration of the papal power in Rome.
- 1811 – The **German Coast Uprising**, the largest slave revolt in United States history, took place in Louisiana.
- 1979 – The oil tanker *Betelgeuse* **exploded** at the offshore jetty of the Whiddy Island Oil Terminal off Bantry Bay, Ireland, killing approximately 50 people.
- 2004 – **RMS *Queen Mary 2*** *(pictured)*, at the time the longest, widest and tallest passenger ship ever built, was christened by her namesake's granddaughter, Queen Elizabeth II.
- 2011 – In Tucson, Arizona, US, Jared Lee Loughner **opened fire** on an outdoor public meeting, killing six people and injuring twelve others.

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- Wikipedia is an encyclopaedia
- Wikipedia is written from a neutral point of view
- Wikipedia is free content that anyone can edit, use, modify and distribute
- Editors should interact with each other in a respectful and civil manner
- Wikipedia does not have firm rules

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- Many things. But in particular:
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- A means of promotion
  (Neutral point of view based on factual evidence. COI.)
- A place for copyrighted material
  (CC-BY-SA, other free license, or public domain)
- A place for authority - references rule!
  Verifiability not truth

[[WP:NOT]]

Why do people edit?

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- Interact with your readers (and vice versa)
- Immense reach and exposure
- Hundreds of ways to contribute
- Editing is the most effective way to engage with the community
- …and it's rewarding!

[[WP:NOT]]

What makes an article?

What makes an article?

Oberon (moon)

From Wikipedia, the free encyclopedia

Oberon (/ˈoʊbərɒn/),[note 5] also designated **Uranus IV**, is the outermost major moon of the planet Uranus. It is the second largest and second most massive of the Uranian moons, and the ninth most massive moon in the Solar System. Discovered by William Herschel in 1787, Oberon is named after the mythical king of the fairies who appears as a character in Shakespeare's *A Midsummer Night's Dream*. Its orbit lies partially outside Uranus's magnetosphere.

It is likely that Oberon formed from the accretion disk that surrounded Uranus just after the planet's formation. The moon consists of approximately equal amounts of ice and rock, and is probably differentiated into a rocky core and an icy mantle. A layer of liquid water may be present at the boundary between the mantle and the core. The surface of Oberon, which is dark and slightly red in color, appears to have been primarily shaped by asteroid and comet impacts. It is covered by numerous impact craters reaching 210 km in diameter. Oberon possesses a system of *chasmata* (graben or scarps) formed during crustal extension as a result of the expansion of its interior during its early evolution.

The Uranian system has been studied up close only once: the spacecraft *Voyager 2* took several images of Oberon in January 1986, allowing 40% of the moon's surface to be mapped.

Discovery and naming [edit]

Oberon

The best *Voyager 2* image of Oberon, obtained on January 24, 1986

Discovery	
Discovered by	William Herschel
Discovery date	January 11, 1787[1]
Designations	
Alternate name(s)	Uranus IV
Adjective	Oberonian[2]
Orbital characteristics	
Semi-major axis	583 520 km[3]
Eccentricity	0.0014[3]
Orbital period	13.463 234 d[3]

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Español
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Norsk (nynorsk)
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Русский
Sicilianu
Simple English
Slovenčina
Slovenščina
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Tiếng Việt
中文

Discovery and naming [edit]

Oberon was discovered by William Herschel on January 11, 1787; on the same day he discovered Uranus's largest moon, Titania.[1][10] He later reported the discoveries of four more satellites,[11] although they were subsequently revealed as spurious.[12] For nearly fifty years following their discovery, Titania and Oberon would not be observed by any instrument other than William Herschel's,[13] although the moon can be seen from Earth with a present-day high-end amateur telescope.[9]

All of the moons of Uranus are named after characters created by William Shakespeare or Alexander Pope. The name Oberon was derived from Oberon, the King of the Fairies in *A Midsummer Night's Dream*.[14] The names of all four satellites of Uranus then known were suggested by Herschel's son John in 1852, at the request of William Lassell,[15] who had discovered the other two moons, Ariel and Umbriel, the year before.[16] The adjectival form of the name is *Oberonian*, /ˌɒbəˈrouniən/.[2]

Oberon was initially referred to as "the second satellite of Uranus", and in 1848 was given the designation **Uranus II** by William Lassell,[17] although he sometimes used William Herschel's numbering (where Titania and Oberon are II and IV).[18] In 1851 Lassell eventually numbered all four known satellites in order of their distance from the planet by Roman numerals, and since then Oberon has been designated **Uranus IV**.[19]

Orbit [edit]

Oberon orbits Uranus at a distance of about 584,000 km, being the farthest from the planet among its five major moons.[note 6] Oberon's orbit has a small orbital eccentricity and inclination relative to the equator of Uranus.[3] Its orbital period is around 13.5 days, coincident with its rotational period. In other words, Oberon is a synchronous satellite, tidally locked, with one face always pointing toward the planet.[6] Oberon spends a significant part of its orbit outside the Uranian magnetosphere.[20] As a result, its surface is directly struck by the solar wind.[8] This is important, because the trailing hemispheres of satellites orbiting inside a magnetosphere are struck by the magnetospheric plasma, which co–rotates with the planet.[20] This bombardment may lead to the darkening of the trailing hemispheres, which is actually observed for all Uranian moons except Oberon (see below).[8]

Because Uranus orbits the Sun almost on its side, and its moons orbit in the planet's equatorial plane, they (including Oberon) are subject to an extreme seasonal cycle. Both northern and southern poles spend 42 years in a complete darkness, and another 42 years in continuous sunlight, with the sun rising close to the zenith over one of the poles at each solstice.[8] The *Voyager 2* flyby coincided with the southern hemisphere's 1986 summer solstice, when nearly the entire northern hemisphere was unilluminated. Once every 42 years, when Uranus has an equinox and its equatorial plane intersects the Earth, mutual occultations of Uranus's moons become possible. One such event, which lasted for about six minutes, was observed on May 4, 2007, when Oberon occulted Umbriel.[21]

Composition and internal structure [edit]

Oberon is the second largest and most massive of the Uranian moons after Titania, and the ninth most massive moon in the Solar System.[note 7] Oberon's density of 1.63 g/cm^3,[5] which is higher than the typical density of Saturn's satellites, indicates that it consists of roughly equal proportions of water ice and a dense non-ice component.[23] The latter could be made of rock and carbonaceous material including heavy organic compounds.[6] The presence of water ice is supported by spectroscopic observations, which have revealed crystalline water ice on the surface of the moon.[8] Water ice absorption bands are stronger on Oberon's trailing hemisphere than on the leading hemisphere. This is the opposite of what is observed on other Uranian moons, where the leading hemisphere exhibits stronger water ice signatures.[8] The cause of this asymmetry is not known, but it may be related to impact gardening (the creation of soil via impacts) of the surface, which is stronger on the leading hemisphere.[8] Meteorite impacts tend to sputter (knock out) ice from the surface, leaving dark non-ice material behind.[8] The dark material itself may have formed as a result of radiation processing of methane clathrates or radiation darkening of other organic compounds.[6][24]

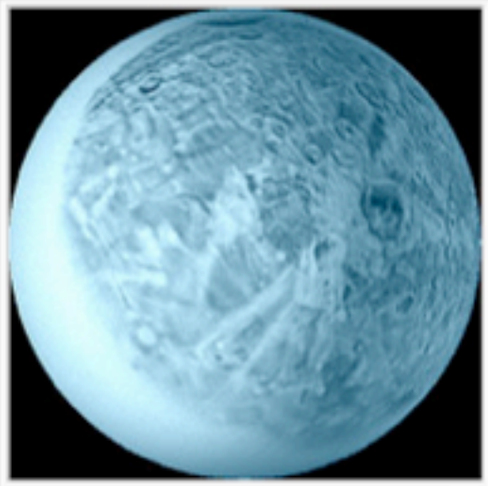
Oberon may be differentiated into a rocky core surrounded by an icy mantle.[23] If this is the case, the radius of the core (480 km) is about 63% of the radius of the moon, and its mass is around 54% of the moon's mass—the proportions are dictated by the moon's composition. The pressure in the center of Oberon is about 0.5 GPa (5 kbar).[23] The current state of the icy mantle is unclear. If the ice contains enough ammonia or other antifreeze, Oberon may possess a liquid ocean layer at the core–mantle boundary. The thickness of this ocean, if it exists, is up to 40 km and its temperature is around 180 K.[23] However, the internal structure of Oberon depends heavily on its thermal history, which is poorly known at present.

Orbital period	13.463 234 d[3]
Inclination	0.058° (to Uranus's equator)[3]
Satellite of	Uranus
Physical characteristics	
Mean radius	761.4 ± 2.6 km (0.1194 Earths)[4]
Surface area	7 285 000 km^2[note 1]
Volume	1 849 000 000 km^3[note 2]
Mass	$3.014 \pm 0.075 \times 10^{21}$ kg (5.046×10^{-4} Earths)[5]
Mean density	1.63 ± 0.05 g/cm^3[5]
Equatorial surface gravity	0.348 m/s^2[note 3]
Escape velocity	0.726 km/s[note 4]
Rotation period	presumed synchronous[6]
Albedo	0.31 (geometrical), 0.14 (Bond)[7]
Temperature	70–80 K[8]
Apparent magnitude	14.1[9]
Atmosphere	
Surface pressure	zero

which is poorly known at present.

Surface features and geology [edit]

Oberon is the second-darkest large moon of Uranus after Umbriel.[7] Its surface shows a strong opposition surge: its reflectivity decreases from 31% at a phase angle of 0° (geometrical albedo) to 22% at an angle of about 1°. Oberon has a low Bond albedo of about 14%.[7] Its surface is generally red in color, except for fresh impact deposits, which are neutral or slightly blue.[25] Oberon is, in fact, the reddest among the major Uranian moons. Its trailing and leading hemispheres are asymmetrical: the latter is much redder than the former, because it contains more dark red material.[24] The reddening of the surfaces is often a result of space weathering caused by bombardment of the surface by charged particles and micrometeorites over the age of the Solar System.[24] However, the color asymmetry of Oberon is more likely caused by accretion of a reddish material spiraling in from outer parts of the Uranian system, possibly from irregular satellites, which would occur predominately on the leading hemisphere.[26]



A computer-projected false-color image of Oberon. The white region is that which has not yet been photographed by a spacecraft. The large crater with the dark floor (right of center) is Hamlet; the crater Othello is to its lower left, and Mommur Chasma is at upper left.

Scientists have recognized two classes of geological feature on Oberon: craters and chasmata ('canyons'—deep, elongated, steep-sided depressions[27] which would probably be described as rift valleys or escarpments if on Earth).[6] Oberon's surface is the most heavily cratered of all the Uranian moons, with a crater density approaching saturation—when the formation of new craters is balanced by destruction of old ones. This high number of craters indicates that Oberon has the most ancient surface among Uranus's moons.[28] The crater diameters range up to 206 kilometers for the largest known crater,[28] Hamlet.[29] Many large craters are surrounded by bright impact ejecta (rays) consisting of relatively fresh ice.[6] The largest craters, Hamlet, Othello and Macbeth, have floors made of a very dark material deposited after their formation.[28] A peak with a height of about 11 km was observed in some *Voyager* images near the south-eastern limb of Oberon,[30] which may be the central peak of a large impact basin with a diameter of about 375 km.[30] Oberon's surface is intersected by a system of canyons, which, however, are less widespread than those found on Titania.[6] The canyons' sides are probably scarps produced by normal faults[note 8] which can be either old or fresh: the latter transect the bright deposits of some large craters, indicating that they formed later.[31] The most prominent Oberonian canyon is Mommur Chasma.[32]

The geology of Oberon was influenced by two competing forces: impact crater formation and endogenic resurfacing.[31] The former acted over the moon's entire history and is primarily responsible for its present-day appearance.[28] The latter processes were active for a period following the moon's formation. The endogenic processes were mainly tectonic in nature and led to the formation of the canyons, which are actually giant cracks in the ice crust.[31] The canyons obliterated parts of the older surface.[31] The cracking of the crust was caused by the expansion of Oberon by about 0.5%,[31] which occurred in two phases corresponding to the old and young canyons.

The nature of the dark patches, which mainly occur on the leading hemisphere and inside craters, is not known. Some scientists hypothesized that they are of cryovolcanic origin (analogs of lunar maria),[28] while others think that the impacts excavated dark material buried beneath the pure ice (crust).[25] In the latter case Oberon should be at least partially differentiated, with the ice crust lying atop the non-differentiated interior.[25]

Named surface features on Oberon[33] **(Surface features on Oberon are named for characters and places associated with Shakespeare's works)**[34]

Feature	Named after	Type	Length (diameter), km	Coordinates
Mommur Chasma	Mommur, French folklore	Chasma	537	16.3°S 323.5°E
Antony	Mark Antony	Crater	47	27.5°S 65.4°E
Caesar	Julius Caesar		76	26.6°S 61.1°E
Coriolanus	Coriolanus		120	11.4°S 345.2°E
Falstaff	Falstaff		124	22.1°S 19.0°E
Hamlet	Hamlet		206	46.1°S 44.4°E
Lear	King Lear		126	5.4°S 31.5°E

Falstaff	Falstaff	Crater	124	22.1°S 19.0°E
Hamlet	Hamlet		206	46.1°S 44.4°E
Lear	King Lear		126	5.4°S 31.5°E
MacBeth	Macbeth		203	58.4°S 112.5°E
Othello	Othello		114	66.0°S 42.9°E
Romeo	Romeo		159	28.7°S 89.4°E

Origin and evolution [edit]

Oberon is thought to have formed from an accretion disc or subnebula: a disc of gas and dust that either existed around Uranus for some time after its formation or was created by the giant impact that most likely gave Uranus its large obliquity.[35] The precise composition of the subnebula is not known; however, the relatively high density of Oberon and other Uranian moons compared to the moons of Saturn indicates that it may have been relatively water-poor.[note 9][6] Significant amounts of carbon and nitrogen may have been present in the form of carbon monoxide and N_2 instead of methane and ammonia.[35] The moons that formed in such a subnebula would contain less water ice (with CO and N_2 trapped as clathrate) and more rock, explaining the higher density.[6]

Oberon's accretion probably lasted for several thousand years.[35] The impacts that accompanied accretion caused heating of the moon's outer layer.[36] The maximum temperature of around 230 K was reached at the depth of about 60 km.[36] After the end of formation, the subsurface layer cooled, while the interior of Oberon heated due to decay of radioactive elements present in its rocks.[6] The cooling near-surface layer contracted, while the interior expanded. This caused strong extensional stresses in the moon's crust leading to cracking. The present-day system of canyons may be a result of this process, which lasted for about 200 million years,[37] implying that any endogenous activity from this cause ceased billions of years ago.[6]

The initial accretional heating together with continued decay of radioactive elements were probably strong enough to melt the ice[37] if some antifreeze like ammonia (in the form of ammonia hydrate) or some salt was present.[23] Further melting may have led to the separation of ice from rocks and formation of a rocky core surrounded by an icy mantle. A layer of liquid water ('ocean') rich in dissolved ammonia may have formed at the core–mantle boundary.[23] The eutectic temperature of this mixture is 176 K.[23] If the temperature dropped below this value the ocean would have frozen by now. Freezing of the water would have led to expansion of the interior, which may have also contributed to the formation of canyon-like graben.[28] Still, present knowledge of the evolution of Oberon is very limited.

Exploration [edit]

Main article: Exploration of Uranus

So far the only close-up images of Oberon have been from the *Voyager 2* probe, which photographed the moon during its flyby of Uranus in January 1986. Since the closest approach of *Voyager 2* to Oberon was 470,600 km,[38] the best images of this moon have spatial resolution of about 6 km.[28] The images cover about 40% of the surface, but only 25% of the surface was imaged with a resolution that allows geological mapping.[28] At the time of the flyby the southern hemisphere of Oberon was pointed towards the Sun, so the dark northern hemisphere could not be studied.[6] No other spacecraft has ever visited the Uranian system, and no mission to this planet is planned in the foreseeable future.

See also [edit]

- Oberon in fiction

Notes [edit]

1. ^ Surface area derived from the radius r: $4\pi r^2$.
2. ^ Volume v derived from the radius r: $4\pi r^3 / 3$.
3. ^ Surface gravity derived from the mass m, the gravitational constant G and the radius r: Gm / r^2.
4. ^ Escape velocity derived from the mass m, the gravitational constant G and the radius r: $\sqrt{2Gm/r}$.

3. ^ Surface gravity derived from the mass m, the gravitational constant G and the radius r: Gm / r^2.
4. ^ Escape velocity derived from the mass m, the gravitational constant G and the radius r: $\sqrt{2Gm/r}$.
5. ^ In US dictionary transcription, US dict: ō′·bər·ən.
6. ^ The five major moons are Miranda, Ariel, Umbriel, Titania and Oberon.
7. ^ The eight moons more massive than Oberon are Ganymede, Titan, Callisto, Io, Earth's Moon, Europa, Triton, and Titania.[22]
8. ^ Some canyons on Oberon are graben.[28]
9. ^ For instance, Tethys, a Saturnian moon, has a density of 0.97 g/cm^3, which means that it contains more than 90% water.[8]

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A featured article exemplifies our very best work and is distinguished by professional standards of writing, presentation, and sourcing. In addition to meeting the policies regarding content for all Wikipedia articles, it has the following attributes.

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    a. **well-written:** its prose is engaging, even brilliant, and of a professional standard;
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3. **Media.** It has images and other media where appropriate, with succinct captions, and acceptable copyright status. Images included follow the image use policy. Non-free images or media must satisfy the criteria for inclusion of non-free content and be labeled accordingly.
4. **Length.** It stays focused on the main topic without going into unnecessary detail and uses summary style.

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- 04 Jan 2013 – 20606 Widemann (talk · edit · hist) was AfDed by Neelix (t · c); see discussion (5 participants)
- 30 Dec 2012 – Department of Astronomy, Belgrade (talk · edit · hist) AfDed by Randykitty (t · c) was deleted; see discussion (4
- 23 Dec 2012 – East Sussex Astronomical Society (talk · edit · hist) PRODed by Mais oui! (t · c) was deleted
- 23 Dec 2012 – HD 85828 (talk · edit · hist) PRODed by StringTheory11 (t · c) was deleted
- 16 Dec 2012 – 18104 Mahalingam

extraterrestrial contact (talk · edit · hist) was FA nominated by Wer900 (t · c); see discussion

- 08 Nov 2012 – Isaac Newton (talk · edit · hist) FA nominated by TheOriginalSoni (t · c) was closed; see discussion
- 08 Nov 2012 – Leo Minor (talk · edit · hist) FA nominated by Casliber (t · c) was promoted;

(talk · edit · hist) RfC by Goodsheard1 (t · c) was closed; see discussion

Peer reviews

- 19 Dec 2012 – Canis Minor (talk · edit · hist) has been put up for PR by Casliber (t · c); see discussion
- 12 Nov 2012 – Isaac Newton (talk · edit · hist)

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FM						3		3
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C	32	123	461	223	17		2	858
Start	4	158	1,043	2,725	83		7	4,020
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Template		1				339		340
Assessed	107	400	2,443	29,917	144	1,685	35	34,731
Unassessed				1			116	117
Total	107	400	2,443	29,918	144	1,685	151	34,848

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Solar physics

[edit]

From Wikipedia, the free encyclopedia

For the physics journal, see Solar Physics (journal)

Solar physics is the study of our Sun. It is a branch of astrophysics that specializes in exploiting and explaining the detailed measurements that are possible only for our closest star. It intersects with many disciplines of pure physics, astrophysics, and computer science, including fluid dynamics, plasma physics including magnetohydrodynamics, seismology, particle physics, atomic physics, nuclear physics, stellar evolution, space physics, spectroscopy, radiative transfer, applied optics, signal processing, computer vision, and computational physics.

Because the Sun is uniquely situated for close-range observing (other stars cannot be resolved with anything like the spatial or temporal resolution that the Sun can), there is a split between the related discipline of observational astrophysics (of distant stars) and observational solar physics. The Solar Physics Division of the American Astronomical Society boasts about 600 members (in 2008), compared to several thousand in the parent organization.

A major thrust of current (2009) effort in the field of solar physics is integrated understanding of the entire solar system including the Sun and its effects throughout interplanetary space within the heliosphere and on planets and planetary atmospheres. Studies of phenomena that affect multiple systems in the heliosphere, or that are considered to fit within a heliospheric context, are called heliophysics, a new coinage that entered usage in the early years of the current millennium.

See also

[edit]

- Helioseismography
- Institute for Solar Physics (in La Palma in the Canary Islands)

Further reading

[edit]

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- Zirin, Harold (1988). *Astrophysics of the Sun*. Cambridge University Press. ISBN 0-521-30268-4.

External links

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- Living Reviews in Solar Physics
- NASA Solar Physics Page
- SUPARCO Solar physics Page

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Sun

[edit]

From Wikipedia, the free encyclopedia

This article is about the star. For other uses, see Sun (disambiguation).

The **Sun** is the star at the center of the Solar System. It is almost perfectly spherical and consists of hot plasma interwoven with magnetic fields.[12][13] It has a diameter of about 1,392,684 km,[5] about 109 times that of Earth, and its mass (about 2×10^{30} kilograms, 330,000 times that of Earth) accounts for about 99.86% of the total mass of the Solar System.[14] Chemically, about three quarters of the Sun's mass consists of hydrogen, while the rest is mostly helium. The remainder (1.69%, which nonetheless equals 5,628 times the mass of Earth) consists of heavier elements, including oxygen, carbon, neon and iron, among others.[15]

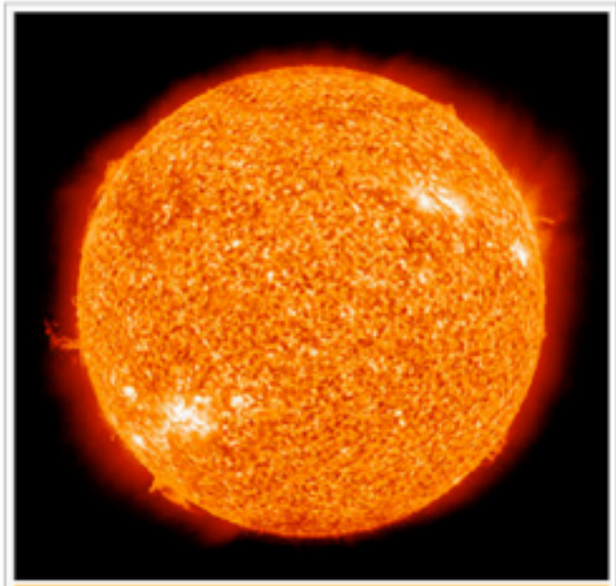
The Sun formed about 4.6 billion years ago from the gravitational collapse of a region within a large molecular cloud. Most of the matter gathered in the center, while the rest flattened into an orbiting disk that would become the Solar System. The central mass became increasingly hot and dense, eventually initiating thermonuclear fusion in its core. It is thought that almost all other stars form by this process. The Sun's stellar classification, based on spectral class, is G2V, and is informally designated as a *yellow dwarf*, because its visible radiation is most intense in the yellow-green portion of the spectrum and although its color is white, from the surface of the Earth it may appear yellow because of atmospheric scattering of blue light.[16] In the spectral class label, *G2* indicates its surface temperature of approximately 5778 K (5505 °C), and *V* indicates that the Sun, like most stars, is a main-sequence star, and thus generates its energy by nuclear fusion of hydrogen nuclei into helium. In its core, the Sun fuses 620 million metric tons of hydrogen each second.

Once regarded by astronomers as a small and relatively insignificant star, the Sun is now thought to be brighter than about 85% of the stars in the Milky Way galaxy, most of which are red dwarfs.[17][18] The absolute magnitude of the Sun is +4.83; however, as the star closest to Earth, the Sun is the brightest object in the sky with an apparent magnitude of −26.74.[19][20] The Sun's hot corona continuously expands in space creating the solar wind, a stream of charged particles that extends to the heliopause at roughly 100 astronomical units. The bubble in the interstellar medium formed by the solar wind, the heliosphere, is the largest continuous structure in the Solar System.[21][22]

The Sun is currently traveling through the Local Interstellar Cloud (near to the G-cloud) in the Local Bubble zone, within the inner rim of the Orion Arm of the Milky Way galaxy.[23][24] Of the 50 nearest stellar systems within 17 light-years from Earth (the closest being a red dwarf named Proxima Centauri at approximately 4.2 light-years away), the Sun ranks fourth in mass.[25] The Sun orbits the center of the Milky Way at a distance of approximately 24,000–26,000 light-years from the galactic center, completing one clockwise orbit, as viewed from the galactic north pole, in about 225–250 million years. Since our galaxy is moving with respect to the cosmic microwave background radiation (CMB) in the direction of the constellation Hydra with a speed of 550 km/s, the Sun's resultant velocity with respect to the CMB is about 370 km/s in the direction of Crater or Leo.[26]

The mean distance of the Sun from the Earth is approximately 149.6 million kilometers (1 AU), though the distance varies as the Earth moves from perihelion in January to aphelion in July.[27] At this average distance, light travels from the Sun to Earth in about 8 minutes and 19 seconds. The energy of this sunlight supports almost all life on Earth by photosynthesis,[28] and drives Earth's climate and weather. The enormous effect of the Sun on the Earth has been recognized since prehistoric times, and the Sun has been regarded by some cultures as a deity. An accurate scientific understanding of the Sun developed slowly, and as recently as the 19th century prominent scientists had little knowledge of the Sun's physical composition and source of energy. This understanding is still developing; there are a number of present day anomalies in the Sun's behavior that remain

The Sun ⊙



Observation data	
Mean distance from Earth	1.496×10^8 km 8 min 19 s at light speed
Visual brightness (*V*)	−26.74[1]
Absolute magnitude	4.83[1]
Spectral classification	G2V
Metallicity	$Z = 0.0122$[2]
Angular size	31.6′ – 32.7′[3]
Adjectives	Solar
Orbital characteristics	
Mean distance from Milky Way core	~2.5×10^{17} km 26,000 light-years
Galactic period	$(2.25–2.50) \times 10^8$ a
Velocity	~220 km/s (orbit around the center of the Galaxy) ~20 km/s (relative to average velocity of

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Plasma (physics)

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From Wikipedia, the free encyclopedia

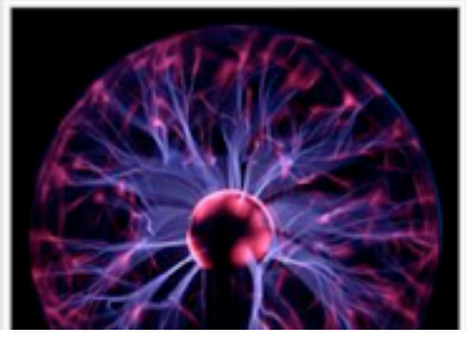
For other uses, see Plasma.

Plasma (from Greek πλάσμα, "anything formed"[1]) is one of the four fundamental states of matter (the others being solid, liquid, and gas). Heating a gas may ionize its molecules or atoms (reduce or increase the number of electrons in them), thus turning it into a plasma, which contains charged particles: positive ions and negative electrons or ions.[2] Ionization can be induced by other means, such as strong electromagnetic field applied with a laser or microwave generator, and is accompanied by the dissociation of molecular bonds, if present.[3]

The presence of a non-negligible number of charge carriers makes the plasma electrically conductive so that it responds strongly to electromagnetic fields. Plasma, therefore, has properties quite unlike those of solids, liquids, or gases and is considered a distinct state of matter. Like gas, plasma does not have a definite shape or a definite volume unless enclosed in a container; unlike gas, under the influence of a magnetic field, it may form structures such as filaments, beams and double layers. Some common plasmas are found in stars and neon signs. In the universe, plasma is the most common state of matter for ordinary matter, most of which is in the rarefied intergalactic plasma (particularly intracluster medium) and in stars. Much of the understanding of plasmas has come from the pursuit of controlled nuclear fusion and fusion power, for which plasma physics provides the scientific basis.

Both lightning and electric sparks are everyday examples of phenomena made from plasma.

Neon lights could more accurately be called "plasma lights", as the light comes from the plasma inside of them.



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Cosmology

[edit]

From Wikipedia, the free encyclopedia

This article **may contain original research**. Please improve it by verifying the claims made and adding references. Statements consisting only of original research may be removed. *(October 2008)*

For other uses, see Cosmology (disambiguation).

Cosmology is the study of the origins and eventual fate of the universe. Physical cosmology is the scholarly and scientific study of the origin, evolution, structure, and ultimate fate of the universe, as well as the natural laws that keep it in order.[1]. Religious cosmology (or mythological cosmology) is a body of beliefs based on the historical, mythological, religious, and esoteric literature and traditions of creation and eschatology.

Physical cosmology is studied by scientists, such as astronomers, and theoretical physicists; and academic philosophers, such as metaphysicians, philosophers of physics, and philosophers of space and time. Modern cosmology is dominated by the Big Bang theory, which attempts to bring together observational astronomy and particle physics.[2]

Although the word *cosmology* is recent (first used in 1730 in Christian Wolff's *Cosmologia Generalis*), the study of the universe has a long history involving science, philosophy, esotericism and religion. Related studies include cosmogony, which focuses on the origin of the Universe, and cosmography, which maps the features of the Universe. Cosmology is also connected to astronomy. However, they are contrasted in that while the former is concerned with the Universe as a whole, the latter deals with individual celestial objects.

The Hubble Extreme Deep Field (XDF) was completed in September 2012 and shows the farthest galaxies ever photographed by humans. Each speck of light in the photo is an individual galaxy, some of them as old as 13.2 billion years; the observable universe is estimated to contain more than 200 billion galaxies.

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In recent times, physics and astrophysics have played a central role in shaping the understanding of the universe through scientific observation and experiment. What is known as physical cosmology shaped through both mathematics and observation the analysis of the whole universe. It is generally understood to begin with the Big Bang, followed almost instantaneously by cosmic inflation - an expansion of space from which the universe is thought to have emerged ~13.7 $\pm 0.2 \times 10^9$ (roughly 13.5–13.9 billion) years ago.[3]

Physical cosmologists propose that the history of the universe has been governed entirely by physical laws. Between the domains of religion and science stands the philosophical perspective of metaphysical cosmology. This ancient field of study seeks to draw intuitive conclusions about the nature of the universe, man, a supernatural creator, and/or their relationships based on the extension of some set of presumed facts borrowed from spiritual experience and/or observation.[citation needed]

Metaphysical cosmology has also been described as the placing of man in the universe in relationship to all other entities. This is exemplified by the observation made by Marcus

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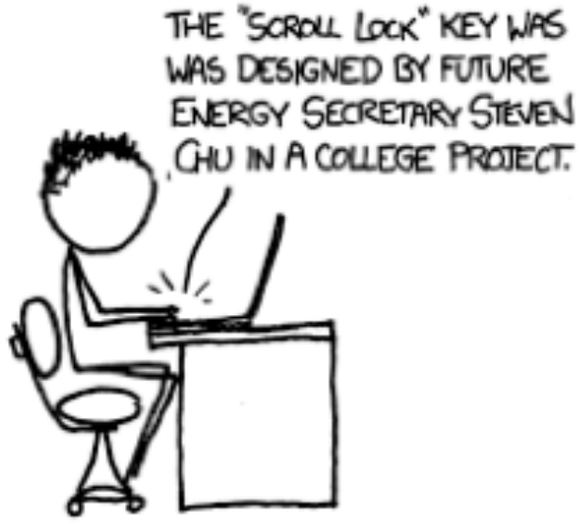

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A PASSING EDITOR FINDS THE PIECE AND ADDS IT AS A CITATION.

STEP #4

NOW THAT OTHER WRITERS HAVE A REAL SOURCE, THEY REPEAT THE FACT.

REFERENCES PROLIFERATE, COMPLETING THE CITOGENESIS PROCESS.

True or false?

True or false?

- It's appropriate to use Wikipedia to promote your own work

True or false?

- It's appropriate to use Wikipedia to promote your own work
  - False

True or false?

- It's appropriate to use Wikipedia to promote your own work
  - False
- You can write about anything on Wikipedia

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- You can write about anything on Wikipedia
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- Wikipedia is unable to deal with complex scientific subjects

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  - False

True or false?

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- Wikipedia is unable to deal with complex scientific subjects
  - False
- The accuracy of Wikipedia has been quantitatively assessed

True or false?

- It's appropriate to use Wikipedia to promote your own work
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  - False
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  - True
- Wikipedia is unable to deal with complex scientific subjects
  - False
- The accuracy of Wikipedia has been quantitatively assessed
  - True

Accuracy

- Giles (2005) in Nature News looked at the accuracy of Wikipedia articles with Britannica articles
- 42 entries peer reviewed by experts
- Average of 4 inaccuracies per Wikipedia article
- Average of 3 inaccuracies per Brittanica article
- 4 serious errors in each of Wikipedia & Brittanica
- ... errors will have been corrected in Wikipedia.

Giles (2005) , Nature, 438, 900

Notability

- Wikipedia doesn't have articles on everything & everyone
- Notability guidelines set out what is needed
- Before they can have an article , topics must have:
  - Significant coverage of the subject
  - Reliable references (secondary sources)
  - 'Third party' / independent sources

[[WP:NOTE]]

Notability

- Astronomical objects:
  - “Subjects of articles on astronomical objects are required to be notable; an astronomical object is presumed to be notable if it has received significant coverage in reliable sources that are independent of the scientist(s) who discovered the object, or have a vested interest in its study.”

[[WP:NOTE]]

Notability

- Academics:
  - The person's research has made significant impact in their scholarly discipline, broadly construed, as demonstrated by independent reliable sources.
  - The person has received a highly prestigious academic award or honor at a national or international level.
  - The person is or has been an elected member of a highly selective and prestigious scholarly society or association (e.g., a National Academy of Sciences or the Royal Society) or a Fellow of a major scholarly society for which that is a highly selective honor (e.g., the IEEE).
  - The person's academic work has made a significant impact in the area of higher education, affecting a substantial number of academic institutions.
  - The person holds or has held a named chair appointment or "Distinguished Professor" appointment at a major institution of higher education and research (or an equivalent position in countries where named chairs are uncommon).
  - The person has held a highest-level elected or appointed academic post at a major academic institution or major academic society.
  - The person has made substantial impact outside academia in their academic capacity.
  - The person is or has been the head or chief editor of a major well-established academic journal in their subject area.
  - The person is in a field of literature (e.g writer or poet) or the fine arts (e.g., musician, composer, artist), and meets the standards for notability in that art, such as WP:CREATIVE or WP:MUSIC.

[[WP:NOTE]]

Complexity

- Topics are covered at different levels
- Introduction summarises topic in ~3 paragraphs
- Body of article then expands in detail
- Also: Simple Wikipedia, for those whose first language is not English
- Some articles get too complicated - particularly with mathematics!
- General relativity! (But intro to)
-

Giles (2005) , Nature, 438, 900

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Mathematics of general relativity

[edit]

From Wikipedia, the free encyclopedia

For a generally accessible and less technical introduction to the topic, see Introduction to mathematics of general relativity.

The **mathematics of general relativity** refers to various mathematical structures and techniques that are used in studying and formulating Albert Einstein's theory of general relativity. The main tools used in this geometrical theory of gravitation are tensor fields defined on a Lorentzian manifold representing spacetime. This article is a general description of the mathematics of general relativity.

Note: General relativity articles using tensors will use the abstract index notation.

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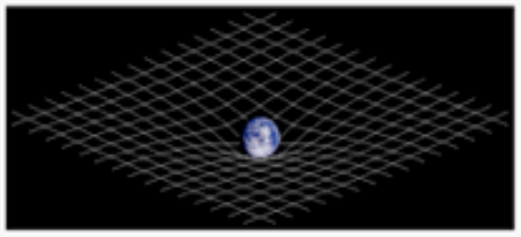
General relativity



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V · T · E

$$\nabla_a T^{ab} = \nabla_a (T_c g^{bc}) = g^{bc} \nabla_a T_c$$

The Lie derivative [edit]

Main articles: Lie derivative and Spacetime symmetries

Another important tensorial derivative is the Lie derivative. Unlike the covariant derivative, the Lie derivative is independent of the metric, although in general relativity one usually uses an expression that seemingly depends on the metric through the affine connection. Whereas the covariant derivative required an affine connection to allow comparison between vectors at different points, the Lie derivative uses a congruence from a vector field to achieve the same purpose. The idea of Lie dragging a function along a congruence leads to a definition of the Lie derivative, where the dragged function is compared with the value of the original function at a given point. The Lie derivative can be defined for type (r, s) tensor fields and in this respect can be viewed as a map that sends a type (r, s) to a type (r, s) tensor.

The Lie derivative is usually denoted by $\mathcal{L}_X$, where X is the vector field along whose congruence the Lie derivative is taken.

The Lie derivative of any tensor along a vector field can be expressed through the covariant derivatives of that tensor and vector field. The Lie derivative of a scalar is just the directional derivative:

$$\mathcal{L}_X \phi = X^a \nabla_a \phi = X^a \frac{\partial \phi}{\partial x^a}$$

Higher rank objects pick up additional terms when the Lie derivative is taken. For example, the Lie derivative of a type (0, 2) tensor is

$$\mathcal{L}_X T_{ab} = X^c \nabla_c T_{ab} + (\nabla_a X^c) T_{cb} + (\nabla_b X^c) T_{ac} = X^c T_{ab,c} + X^c_{\ ,a} T_{cb} + X^c_{\ ,b} T_{ac}$$

More generally,

$$\begin{aligned}\mathcal{L}_X T^{a_1 \ldots a_r}{}_{b_1 \ldots b_s} = {} & X^c (\nabla_c T^{a_1 \ldots a_r}{}_{b_1 \ldots b_s}) - \\ & (\nabla_c X^{a_1}) T^{c \ldots a_r}{}_{b_1 \ldots b_s} - \ldots - (\nabla_c X^{a_r}) T^{a_1 \ldots a_{r-1} c}{}_{b_1 \ldots b_s} + \\ & (\nabla_{b_1} X^c) T^{a_1 \ldots a_r}{}_{c \ldots b_s} + \ldots + (\nabla_{b_s} X^c) T^{a_1 \ldots a_r}{}_{b_1 \ldots b_{s-1} c}\end{aligned}$$

In fact in the above expression, one can replace the covariant derivative ∇_a with *any* torsion free connection $\tilde{\nabla}_a$ or locally, with the coordinate dependent derivative ∂_a, showing that the Lie derivative is independent of the metric. The covariant derivative is convenient however because it commutes with raising and lowering indices.

One of the main uses of the Lie derivative in general relativity is in the study of spacetime symmetries where tensors or other geometrical objects are preserved. In particular, Killing symmetry (symmetry of the metric tensor under Lie dragging) occurs very often in the study of spacetimes. Using the formula above, we can write down the condition that must be satisfied for a vector field to generate a Killing symmetry:

$$\begin{aligned}\mathcal{L}_X g_{ab} &= 0 \\ \Leftrightarrow \nabla_a X_b + \nabla_b X_a &= 0 \\ \Leftrightarrow X^c g_{ab,c} + X^c_{\ ,a} g_{bc} + X^c_{\ ,b} g_{ac} &= 0\end{aligned}$$

The Riemann curvature tensor [edit]

Main article: Riemann tensor (general relativity)

A crucial feature of general relativity is the concept of a curved manifold. A useful way of measuring the curvature of a manifold is with an object called the Riemann (curvature) tensor.

This tensor measures curvature by use of an affine connection by considering the effect of parallel transporting a vector between two points along two curves. The discrepancy between the results of these two parallel transport routes is essentially quantified by the Riemann tensor.

This property of the Riemann tensor can be used to describe how initially parallel geodesics diverge. This is expressed by the equation of geodesic deviation and means that the tidal forces experienced in a gravitational field are a result of the curvature of spacetime.

Using the above procedure, the Riemann tensor is defined as a type (1, 3) tensor and when fully written out explicitly contains the Christoffel symbols and its first partial derivatives. The Riemann tensor has 20 independent components. The vanishing of all these components over a region indicates that the spacetime is flat in that region. From the viewpoint of geodesic

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Introduction to mathematics of general relativity

[edit]

From Wikipedia, the free encyclopedia

This article is an accessible, non-technical introduction to the subject. For the main encyclopedia article, see Mathematics of general relativity.

The **mathematics of general relativity** is very complex. In Newton's theories of motions, an object's mass and length remain constant as it changes speed, and the rate of passage of time also remains unchanged. As a result, many problems in Newtonian mechanics can be solved with algebra alone. In relativity, on the other hand, mass, length, and the passage of time all change as an object's speed approaches the speed of light. The additional variables greatly complicate calculations of an object's motion. As a result, relativity requires the use of vectors, tensors, pseudotensors, curvilinear coordinates and many other complicated mathematical concepts.

All the mathematics discussed in this article were known before Einstein's general theory of relativity.

For an introduction based on the specific physical example of particles orbiting a large mass in circular orbits, see Newtonian motivations for general relativity for a nonrelativistic treatment and Theoretical motivation for general relativity for a fully relativistic treatment.

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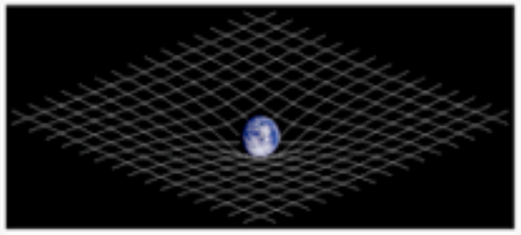
General relativity



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V · T · E

Vectors and tensors

[edit]

Editing

- Every page has an ‘edit’ button
- ‘Wikicode’ similar to latex - mathematics is latex
- Examples:
  - '''Bold''' would be **Bold**
  - [[Link]] would be a link
  - [http://wikipedia.org Wikipedia] - external link
  - $A = \alpha x^c$ gives $A = \alpha x^c$
- Register first, use sandbox to experiment

Editing Introduction to mathematics of general relativity


```
{{introduction|Mathematics of general relativity}}
{{General relativity}}

The '''mathematics of general relativity''' is very complex. In [[Isaac Newton|Newton's]] theories of motions, an object's mass
and length remain constant as it changes speed, and the rate of passage of time also remains unchanged. As a result, many problems
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For an introduction based on the specific physical example of particles orbiting a large mass in [[circular orbit]]s, see
[[Newtonian motivations for general relativity]] for a nonrelativistic treatment and [[Theoretical motivation for general
relativity]] for a fully relativistic treatment.

==Vectors and tensors==
{{main|Euclidean vector|Tensor}}

===Vectors===

[[Image:Vector by Zureks.svg|right|thumb|Illustration of a typical vector.]]

In [[mathematics]], [[physics]], and [[engineering]], a '''Euclidean vector''' (sometimes called a '''geometric'''<ref>
{{harvnb|Ivanov|2001}}</ref> or '''spatial vector''',<ref>{{harvnb|Heinbockel|2001}}</ref> or – as here – simply a vector) is a
geometric object that has both a [[Magnitude (mathematics)|magnitude]] (or [[euclidean norm|length]]) and direction. A vector is
what is needed to "carry" the point ''A'' to the point ''B''; the Latin word ''vector'' means "one who carries".<ref>Latin:
vectus, [[perfect participle]] of vehere, "to carry"/ ''veho'' = "I carry".  For historical development of the word ''vector'',
see {{OED|vector ''n.''}} and {{cite web|author = Jeff Miller| url = http://jeff560.tripod.com/v.html | title = Earliest Known
Uses of Some of the Words of Mathematics | accessdate = 2007-05-25}}.</ref> The magnitude of the vector is the distance between
the two points and the direction refers to the direction of displacement from ''A'' to ''B''. Many [[algebraic operation]]s on
[[real number]]s such as [[addition]], [[subtraction]], [[multiplication]], and [[negation]] have close analogues for vectors,
operations which obey the familiar algebraic laws of [[commutativity]], [[associativity]], and [[distributivity]].
```

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Vectors and tensors

Main articles: Euclidean vector and Tensor

Vectors

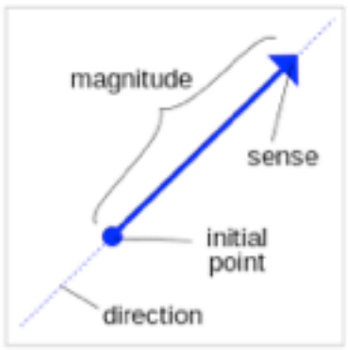
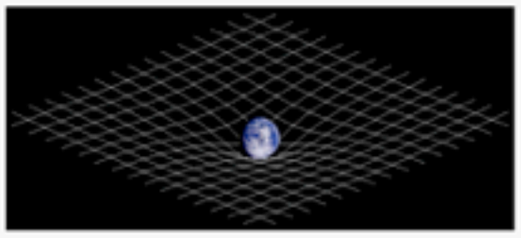


Illustration of a typical vector.

In mathematics, physics, and engineering, a **Euclidean vector** (sometimes called a **geometric**[1] or **spatial vector**,[2] or – as here – simply a vector) is a geometric object that has both a magnitude (or length) and direction. A vector is what is needed to "carry" the point *A* to the point *B*; the Latin word *vector* means "one who carries".[3] The magnitude of the vector is the distance between the two

General relativity



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Fundamental concepts

Special relativity
Equivalence principle
World line · Riemannian geometry

Phenomena

Kepler problem · Lenses · Waves
Frame-dragging · Geodetic effect
Event horizon · Singularity
Black hole

Equations

Linearized gravity
Post-Newtonian formalism
Einstein field equations
Geodesic equation
Friedmann equations
ADM formalism
BSSN formalism
Hamilton–Jacobi–Einstein equation

Advanced theories

Kaluza–Klein
Quantum gravity

Solutions

How to use Wikipedia

- Great place to start learning about a topic
- But terrible place to stop!
- Students should use Wikipedia to get an overview
- Then use references to learn more
- Should only reference/quote Wikipedia in general terms "The conventional viewpoint on this topic is ... (Wikipedia)
- "Cite this page" link in sidebar for easy referencing

Wikipedia Assignments

- Get students to write Wikipedia articles
- Rather than being shredded after the assignment, they will be read by a world-wide audience
- Very good lesson in the importance of references!
- Grading can be difficult
  - Each assignment is on a different topic
  - Collaborative effort - separate out contributions
  - Can use FA/GA criteria
  - Can use metrics e.g. amount of content added, number of references used

BBC Nature – Puffin videos, news and facts

BBC Nature – Puffin videos, new...

http://www.bbc.co.uk/nature/life/Atlantic_Puffin

Wikipedia (en)

BBC

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NATURE WILDLIFE

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Life > Animals > Birds > Puffin

Puffin

Puffins are colourful and full of character. Playfully known as 'clowns of the sea' and 'sea parrots', these shy and inquisitive seabirds arrive in Britain at the start of the breeding se
annual moult which re
while, though they rem
underwater. A single pu
underground burrow ar
with their parrot-like bil
intended for their fast-g
winter, puffins disperse

Did you know?
Young puffins are calle

Scientific name: Frater
Rank: Species
Common names: Atlan

About

The Atlantic Puffin (Fratercula arctica) is a seabird species in the auk family. It is a pelagic bird that feeds primarily by diving for fish, but also eats other sea creatures, such as squid and crustaceans. Its most obvious characteristic during the breeding season is its brightly coloured bill. Also known as the Common Puffin, it is the only puffin species which is found in the Atlantic Ocean. The curious appearance of the bird, with its colourful huge bill and its striking piebald plumage, has given rise to nicknames such as "'clown of the ocean" and "sea parrot"

Read more at Wikipedia

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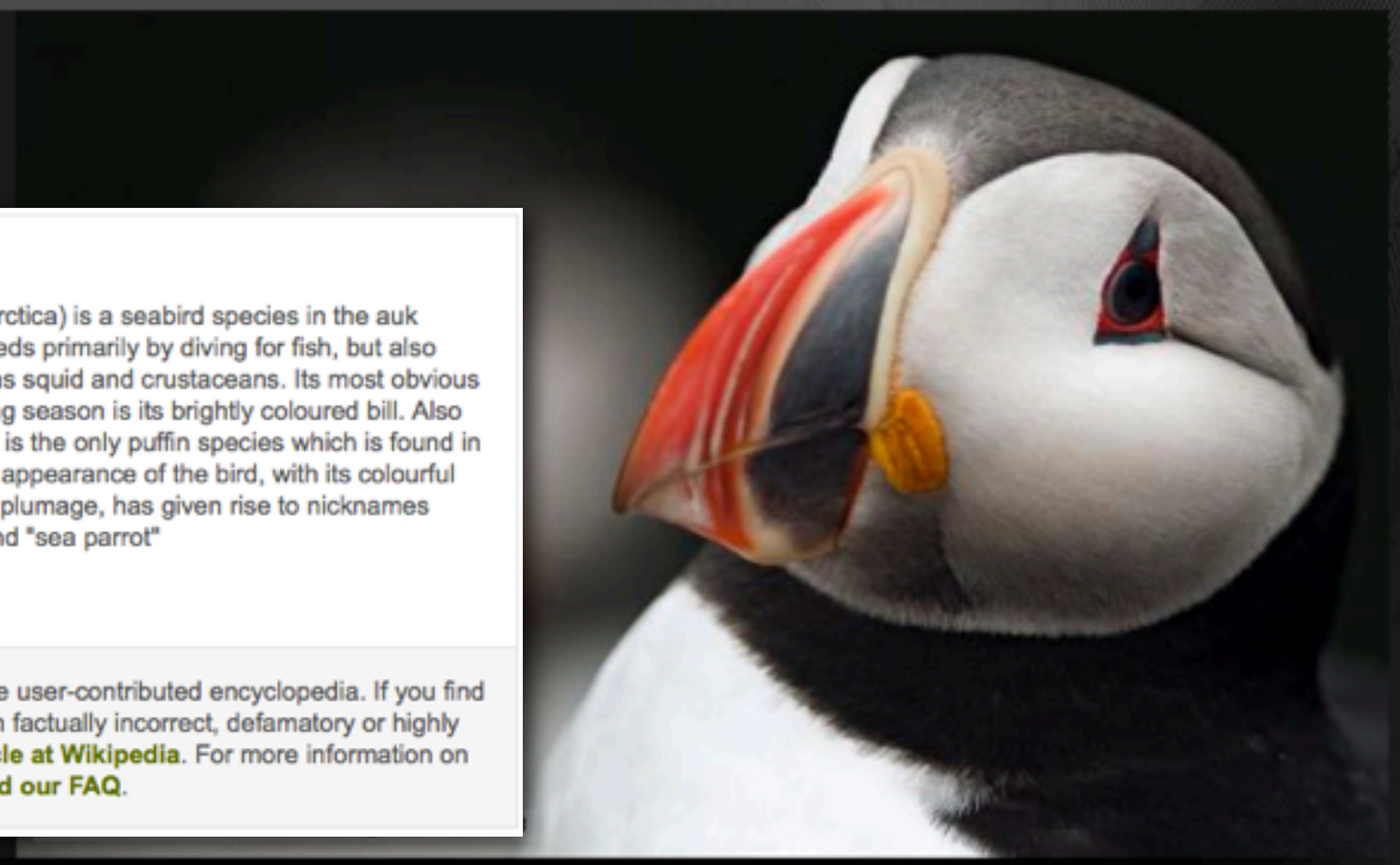
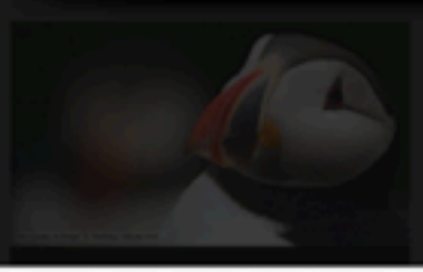
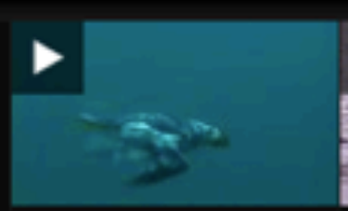




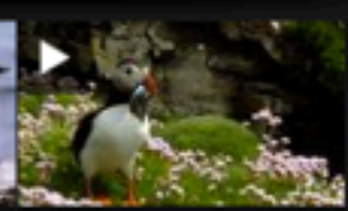


Snorkelling with

All at sea
Bill Oddie Goes Wild
Bill Oddie reluctantly

Puffling
Springwatch
A Skomer Island

Bird monument
Bill Oddie Goes Wild
The Farne Islands'



Pompous puffins
Bill Oddie's Top 10
Birds

http://www.bbc.co.uk/nature/life/Atlantic_Puffin#intro

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Rfam

[edit]

From Wikipedia, the free encyclopedia

Rfam is a database containing information about non-coding RNA (ncRNA) families and other structured RNA elements. It is an annotated, open access database hosted by the Wellcome Trust Sanger Institute in collaboration with Janelia Farm.[1][2][3][4] Rfam is designed to be similar to the Pfam database for annotating protein families.

Unlike proteins, ncRNAs often have similar secondary structure without sharing much similarity in the primary sequence. Rfam divides ncRNAs into families based on evolution from a common ancestor. Producing multiple sequence alignments (MSA) of these families can provide insight into their structure and function, similar to the case of protein families. These MSAs become more useful with the addition of secondary structure information. Rfam researchers also contribute to Wikipedia's RNA WikiProject.[4][5]

Rfam

Content	
Description	The Rfam database provides alignments, consensus secondary structures and covariance models for RNA families.
Data types captured	RNA families
Organisms	all
Contact	
Research center	WTSI
Primary citation	PMID 21062808
Access	
Data format	Stockholm format
Website	Rfam
Download URL	Rfam ftp
Tools	
Miscellaneous	
License	Public domain
Bookmarkable entities	yes

Uses

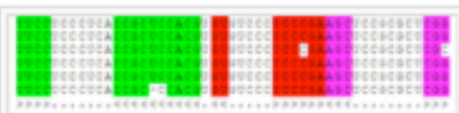
[edit]

The Rfam database can be used for a variety of functions. For each ncRNA family, the interface allows users to: view and download multiple sequence alignments; read annotation; and examine species distribution of family members. There are also links provided to literature references and other RNA databases. Rfam also provides links to Wikipedia so that entries can be created or edited by users.

The interface at the Rfam website allows users to search ncRNAs by keyword, family name, or genome as well as to search by ncRNA sequence or EMBL accession number. [1] The database information is also available for download, installation and use using the INFERNAL software package.[6][7] The INFERNAL package can also be used with Rfam to annotate sequences (including complete genomes) for homologues to known ncRNAs.

Methods

[edit]



A theoretical ncRNA alignment from 6 species. Secondary structure base pairs are coloured in blocks and identified in the secondary structure consensus sequence (bottom line) by the < and > symbols.

In the database, the information of the secondary structure and the primary sequence, represented by the MSA, is combined in statistical models called profile stochastic context-free grammars (SCFGs), also known as covariance models. These are analogous to hidden Markov models used for protein family annotation in the Pfam database.[1] Each family in the database is represented by two multiple sequence alignments in Stockholm format and a SCFG.

The first MSA is the "seed" alignment. It is a hand-curated alignment that contains representative members of the ncRNA family and is annotated with structural information. This seed alignment is used to create the SCFG, which is used with the Rfam software INFERNAL to identify additional family members and add them to the alignment. A family-specific threshold value is chosen to avoid false positives.

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Portal:Gene Wiki

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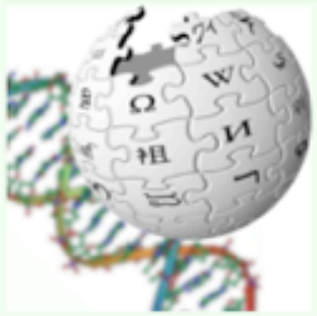
Gene Wiki – Portal

Welcome edit



Welcome to the Gene Wiki portal. This portal is dedicated to the goal of applying community intelligence to the annotation of gene and protein function. The Gene Wiki is an informal collection of pages on human genes and proteins, and this effort to develop these pages is tightly coordinated with the Molecular and Cellular Biology Wikiproject. Our specific aims are summarized as follows:

To provide a well written and informative Wikipedia article for every notable human gene
To invite participation by interested lay editors, students, professionals, and academics from around the world
To integrate Gene Wiki articles with existing Wikipedia content through the use of internal wiki links increasing the value of both

The Gene Wiki, in aggregate, is comprised of over **10,000 distinct gene pages**, spanning 1.42 million words and 78 megabytes of data. These pages are viewed over **50 million times** per year and edited over **15,000 times** per year.

Please browse around the Gene Wiki, make an edit to your favorite gene page, and feel free to ask questions!

Quick Links edit

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- Request a gene or create your own
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- Structured data extracted from the gene wiki, including a list of all articles and their associated Entrez ids
- **Recent changes** (**articles** , **templates**)
- **Candidate annotations**
- Linker from Entrez Gene ID
- Mapping table from Entrez Gene ID to Wikipedia page (auto-updated weekly)
- Publications and news
  - Huss JW, Orozco C, Goodale J, Wu C, Batalov S, Vickers TJ, Valafar F, Su AI (July 2008). "A Gene Wiki for Community Annotation of Gene Function". *PLoS Biol.* **6** (7): e175. doi:10.1371/journal.pbio.0060175. PMC 2443188. PMID 18613750.
  - Huss JW, Lindenbaum P, Martone M, Roberts D, Pizarro A, Valafar F, Hogenesch JB, Su AI (September 2009). "The Gene Wiki: community intelligence applied to human gene annotation". *Nucleic Acids Res.* **Database issue**. doi:10.1093/nar/gkp760. PMC 2808918. PMID 19755503.
  - Good, BM; Clarke, EL, de Alfaro, L, Su, AI (2011 Nov 10). "The Gene Wiki in 2011: community intelligence applied to human gene annotation.". *Nucleic acids research.* PMID 22075991.
  - Good, BM; Howe, DG, Lin, SM, Kibbe, WA, Su, AI (2011 Dec 13). "Mining the Gene Wiki for functional genomic knowledge.". *BMC genomics* **12** (1): 603. doi:10.1186/1471-2164-12-603. PMID 22165947.

Top Gene Wiki articles (as of Sept. 1, 2011)

Rank	by size (word count)	by page views in Aug., 2011
1	Insulin	Human chorionic gonadotropin
2	Reelin	Oxytocin
3	Survivin	Insulin
4	Perlecan	C-reactive protein
5	Glucokinase	Titin
6	Protein C	Prolactin
7	H19 (gene)	BAMBI
8	SULF1	ANKH
9	PRDM1	Vasopressin
10	Secreted frizzled-related protein 1	CLOCK

Conclusions

- What can be contributed?
  - Knowledge (with references!)
  - Photos, videos
  - Copyediting
- What do you get out of it?
  - Knowledge (best way to learn something is to teach it)
  - A world-wide audience for your contributions
  - A warm fuzzy feeling

Thanks for listening!
Questions?

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