
ANTENNA



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The universe is a big place. The distances involved are measured not in Kilometres but in light years. 1 light year is the distance light travels in 1 year, and given light travels at around 300,000 Km/second, we are talking about vast distances.

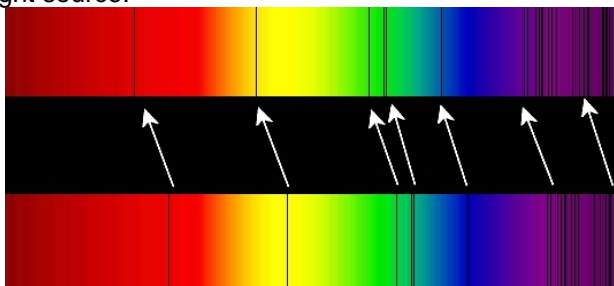
So how do we work out what stars are made of, or how far away they are? We use what is called the Doppler shift effect.

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The Doppler shift effect

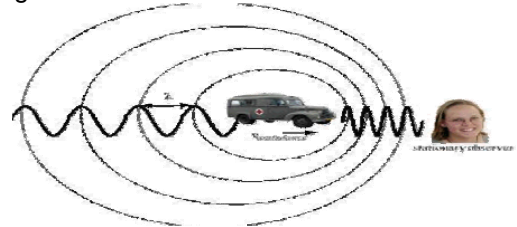
People have always looked to the heavens and wondered 'What are those lights up there'? Others wondered what are they made of, and how can we find out?

What are stars made of and how did we find out? Scientists used prisms to split light into the visible spectrum and discovered that there were some dark lines through the spectrum, as seen in the image. They worked out that the lines corresponded to elements within a light source. Experimentation showed that a given dark line at a given location in the spectrum always indicated a particular element. So using this information, scientists can now determine the elemental composition of a star, galaxy or other light source.



Scientists also noted that the elemental signatures, moved up or down on the spectrum. They figured out that the shifting was due to the speed in which a star was moving in relation to the earth. If the elemental signature moved towards the red end of the spectrum, the star was moving away from us, how far the signature had shifted indicated how fast the star was moving away from us. If the signature moved closer to the blue end of the spectrum, then the star was moving towards us, and the amount of the shift indicated how fast. The diagram shows a stars light signature moved

towards the red end so it is moving away. If the arrows pointed the other way then the star would be moving towards us.

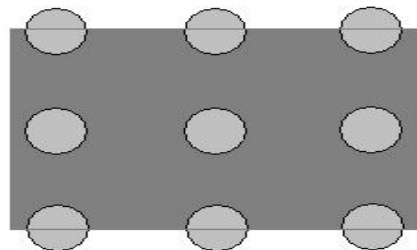


The shifting is called the Doppler effect, or Doppler Shift. Lets use a siren from an emergency vehicle to demonstrate. Sound waves move at a constant speed through the air. If your standing on the side of the road as the vehicle approaches, the waves are compressed, making the siren higher in pitch, as the siren moves away the sound waves are stretched further apart making the sirens pitch sound lower. The same effect happens with light, as the source moves away the light is stretched, making the light appear to be redder then it actually is. A light source moving towards us makes the light appear bluer then it actually is.

* http://en.wikipedia.org/wiki/Doppler_effect

* <http://www.futura-sciences.com/comprendre/d/imprimer.php?id=510>

Going Dotty - Part 4



In the last edition I asked if you could connect the 9 dots with 1 straight line, and staying to within 1 Cm of the dots on the outer edge. Above is the answer, a very wide line. Another answer was to get the page, tun it into a cylinder and draw a line around covering all the dots.

Submissions

They can be anything Science based. A joke, something of interest, a question you would like answered.

Astronomy word search

All the words are in straight lines, horizontal, vertical, or diagonal. Some may be spelled backwards.

B	E	E	Y	P	Y	H	O	B	N	Z	A	B	J	S	J	G	R	A	A	R	R	S	Q
I	A	L	D	T	L	R	T	R	L	O	B	A	S	X	A	O	S	B	E	A	U	U	A
G	T	P	O	I	I	A	A	R	B	U	V	J	O	L	T	T	S	V	T	N	A	X	M
B	E	S	P	H	T	V	N	N	A	I	E	A	A	A	R	O	O	S	S	S	I	S	N
A	S	O	T	A	K	P	A	E	I	E	T	X	T	O	L	L	O	P	A	S	I	O	O
N	P	L	D	X	R	C	A	R	T	B	Y	I	N	U	U	T	O	R	S	I	U	L	I
G	I	A	G	N	H	E	A	E	G	S	O	O	T	T	O	T	U	R	J	A	S	A	S
T	L	R	S	W	W	O	N	L	N	N	M	E	I	R	O	R	A	C	Y	S	M	R	U
H	C	S	I	X	G	E	H	T	B	Y	M	O	P	U	A	T	E	F	A	U	Q	E	F
E	E	Y	V	L	O	E	X	A	M	A	N	M	S	G	S	F	W	S	Z	Z	E	C	R
O	R	S	D	O	T	F	B	E	G	A	M	T	E	U	F	L	T	H	L	C	N	L	A
R	A	T	E	C	A	E	T	N	T	E	G	D	W	T	P	R	H	W	I	Z	U	I	E
Y	N	E	R	L	E	I	I	N	S	A	Y	N	N	F	E	E	Q	R	O	T	S	P	L
J	U	M	U	G	R	T	A	P	U	N	M	Q	I	E	R	O	R	R	A	L	E	S	C
L	L	B	I	O	U	I	D	R	C	O	J	D	G	T	D	A	R	N	O	S	L	E	U
W	E	R	E	D	G	I	O	K	O	D	M	H	A	C	U	I	W	O	O	E	L	E	N
N	E	T	E	R	O	R	L	N	L	B	A	I	J	R	B	D	T	D	I	V	T	U	Y
P	E	W	E	R	A	N	E	U	T	R	O	N	S	T	A	R	E	G	E	D	A	E	P
M	Z	P	E	T	X	O	N	I	U	Q	E	L	A	N	R	E	V	E	N	T	D	I	M
O	U	T	N	T	C	E	R	E	H	P	S	O	T	E	N	G	A	M	E	I	I	F	Q
S	S	A	E	E	I	H	N	O	I	T	A	L	L	E	T	S	N	O	C	G	R	H	O
A	I	M	D	W	I	N	T	E	R	S	O	L	S	T	I	C	E	Z	K	M	O	P	W
G	O	I	O	W	U	K	V	E	C	I	T	S	L	O	S	R	E	M	M	U	S	P	S
C	T	Z	O	G	W	N	J	X	O	N	I	U	Q	E	L	A	N	M	U	T	U	A	A

ABSOLUTE MAGNITUDE
 ASTEROID
 AUTUMNAL EQUINOX
 BINARY
 CONSTELLATION
 GIANT
 MAGNETOSPHERE
 METEOROID
 NEBULA
 NUCLEAR FUSION
 PLANETS
 QUASAR
 SOLAR ECLIPSE
 STARS
 SUNSPOT
 VERNAL EQUINOX

APOGEE
 ASTRONOMY
 AXIS
 BLACK HOLE
 EARTH
 GRAVITY
 METEOR
 MOON
 NEUTRON STAR
 ORBIT
 PROTOSTAR
 REVOLUTION
 SOLAR SYSTEM
 SUMMER SOLSTICE
 SUPERGIANT
 WHITE DWARF

APPARENT MAGNITUDE
 AURORA
 BIG BANG THEORY
 COMET
 GALAXY
 LUNAR ECLIPSE
 METEORITE
 NEAP TIDE
 NOVA
 PERIGEE
 PULSAR
 ROTATION
 SPRING TIDE
 SUN
 SUPERNOVA
 WINTER SOLSTICE