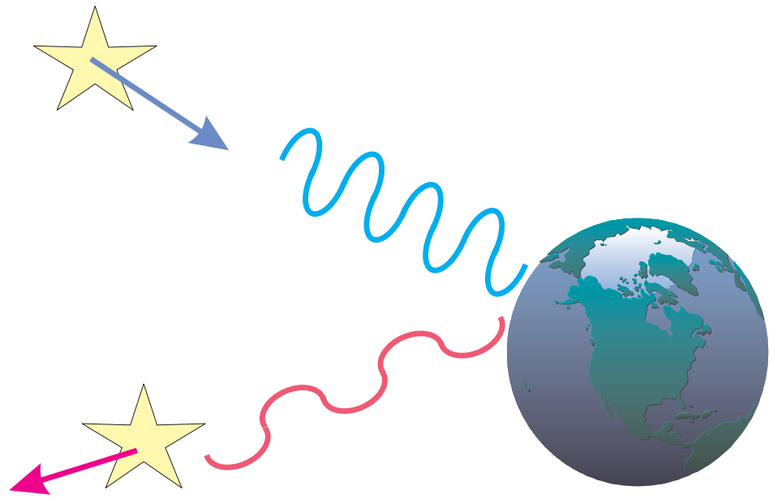
Christian Johann Doppler

1803 - 1853

When a car blowing its horn passes by we first hear a higher pitch as it approaches and then a lower pitch when the car is going away. This sudden change of tone is due to the '***Doppler Effect***'. Christian Doppler discovered, or rather predicted, this phenomenon during his stay in Prague in 1842. He supposed that when an observer is in relative motion to a source of sound or light, a change of registered frequency or colour occurs.

Doppler's original work was entitled "On the coloured light of the double stars and certain other stars in the heavens". Doppler supposed that two components of a double star circling each other should have different colours; the star which moves towards us should be bluish and the other one more reddish. Astronomers, of course, denied that such a thing happens and Doppler's result was not generally accepted at first. But when spectral analysis was introduced, small Doppler shifts of spectral lines made it possible to measure the radial velocities of stars and even the expansion of the whole Universe.

The Doppler effect is widely used in modern physics and technology. The speed of cars, ships and planes can be measured from the frequency change of electromagnetic waves reflected from the moving object; ultrasound waves can penetrate the human body and, according to the Doppler effect, make visible the motion of the heart or the circulation of the blood.



When a light source approaches, there is an increase in its measured frequency, (blue shift); and when it recedes, there is a decrease in its frequency, (red shift)

Policemen can measure the speed of a car by the Doppler radar and fine the driver

Doppler was born in Salzburg, Austria, into a stonemason's family. Their house was just neighboring the house of the Mozart family. Doppler studied at Vienna Polytechnic and Vienna University, but had difficult time finding a suitable position as a teacher or scientist. At last he accepted an offer from Prague, Bohemia (then part of the Austro Hungarian Empire) and moved to that beautiful city. He spent 12 years in Prague teaching at the Prague Polytechnic and doing research. He married here the love of his youth, Mathilde Sturm of Salzburg, who bore him five children.

In 1848 Doppler travelled to Banska Stiavnica, Slovakia, to become a teacher at the famous Academy of Mines. There he took an interest in the problem of the earth's magnetism. After the revolution swept over Hungary, Doppler finally moved to Vienna and organized the first Austrian Physics Institute. He occupied himself with many scientific problems, but his name will always be remembered in connection with his famous effect. At the age of 50 Doppler felt exhausted and his health deteriorated. He sought relief in sunny Venice, but he died soon after arrival and is buried there on the island of San Michele.

I.S.