

## Chapter 7: Navigating with Infrared Headlights:

*Vocabulary words used in this lesson.*

- **Drop-Off Detector** an IR detector for the robot that can detect the edge of a table to prevent dropping off.
- **Electromagnetic spectrum** extends from below the low frequencies used for modern radio communication to gamma radiation at the short-wavelength (high-frequency) end, thereby covering wavelengths from thousands of kilometers down to a fraction of the size of an atom. Visible light lies toward the shorter end, with wavelengths from 400 to 700 nanometres. The limit for long wavelengths is the size of the universe itself, while it is thought that the short wavelength limit is in the vicinity of the Planck length.[4] Until the middle of the 20th century it was believed by most physicists that this spectrum was infinite and continuous.
- **FREQOUT** is a command that allows you to generate sine-wave tones for a duration of time that you can specify.
- **InfraRed** Infrared radiation, or simply infrared or IR, is electromagnetic radiation (EMR) with longer wavelengths than those of visible light, and is therefore invisible, although it is sometimes loosely called infrared light. It extends from the nominal red edge of the visible spectrum at 700 nanometers (frequency 430 THz), to 1 mm (300 GHz). Most of the thermal radiation emitted by objects near room temperature is infrared. Like all EMR, IR carries radiant energy, and behaves both like a wave and like its quantum particle, the photon.
- **infrared LED** A type of Light Emitting Diode. Appearing as practical electronic components in 1962, the earliest LEDs emitted low-intensity infrared light. Infrared LEDs are still frequently used as transmitting elements in remote-control circuits, such as those in remote controls for a wide variety of consumer electronics. The semiconductor materials Gallium arsenide (GaAs) and Aluminium gallium arsenide (AlGaAs) are used to make infrared LEDs.
- **InfraRed Sensor** is an electronic sensor that measures infrared (IR) light radiating from objects in its field of view.

Infrared was discovered in 1800 by astronomer Sir William Herschel, who discovered a type of invisible radiation in the spectrum lower in energy than red light, by means of its effect on a thermometer. Slightly more than half of the total energy from the Sun was eventually found to arrive on Earth in the form of infrared. The balance between absorbed and emitted infrared radiation has a critical effect on Earth's climate.

- **IR Object Detector** the *IR* transmitter emits infrared radiation, it reaches the *object* and some of the radiation reflects back to the *IR* receiver.
- **Light Spectrum** can mean the visible *spectrum*, the range of wavelengths of electromagnetic radiation which our eyes are sensitive to. The electromagnetic spectrum is the entire range and scope (spectrum) of frequencies of electromagnetic radiation and their respective wavelengths and photon energies.
- **Millisecond** one thousandth of a second.

