

References : DOPPLER2, DOPPLERKIT



**Mobile speed: up to 10 m / s**  
 **$\Delta f$  visible directly on the oscilloscope ( 1.2 kHz)**  
**Ultrasound: silent experiment**  
**A multitude of experiments**

This complete system makes it possible to study the Doppler effect in all its forms and thus to illustrate its various applications such as speed measurement (radar principle), the red shift of distant objects linked to the expansion of the Universe, the relative speed of stars, etc.

The device consists of a mobile sliding on two rails and propelled by two elastic bands. A 40 kHz generator integrated into the electronic box powers the ultrasonic transmitter.

Several configurations of experiments are possible:

- Fixed receiver and transmitter (radar principle)
  - Fixed Receiver / Mobile Transmitter (approaches or moves away)
  - Fixed transmitter / mobile receiver (approaches or moves away)
- All these experiments can be performed in the axis of the movement of the mobile or at an angle ranging from 30 ° to 90 °
- The results are obtained in two ways:
- Either the signals of the transmitter and the receiver (outputs on BNC) are visualized on an oscilloscope or on a data logging interface and the frequency offset between the two signals is measured (valid for fixed or mobile transmitter)

- Or the frequency offset is visualised directly thanks to an integrated calculation (output on BNC socket). This result will be obtained only if a mobile transmitter is used.

Speed can also be measured using a photogate with ref.BEESPI (provided only in the full version P / DOPPLERKIT) which will be placed in the middle of the bench. This is a good way of checking the results.