## **Length Contraction**

- Length contraction is the decrease in length of an object as measured by an observer in a frame of reference moving relative to that of the object.
- It is only significant when the object is travelling at a velocity close to the speed of light



- I' = length measured in a frame of reference moving relative to that of the object
- I = length of the object in its own frame of reference
- v= relative velocity of the two frames of reference

c= speed of light DopNer Ever The Doppler effect is the apparent change in (seque) of which occurs when a source of waves and an preciver are moving related to each other. If the source is moving away- wavelength increases, frequency decreases If the source is moving towards- wavelength reduced, frequency increased Fo = fs (V/V+Vs) – use + when source moving away

- Fo = fs (V/V-Vs) use when source moving towards
- Fo = observed frequency (Hz) fs = frequency of source (Hz) v = speed of waves (ms<sup>-1</sup>)
- Vs = speed of source (ms<sup>-1</sup>)