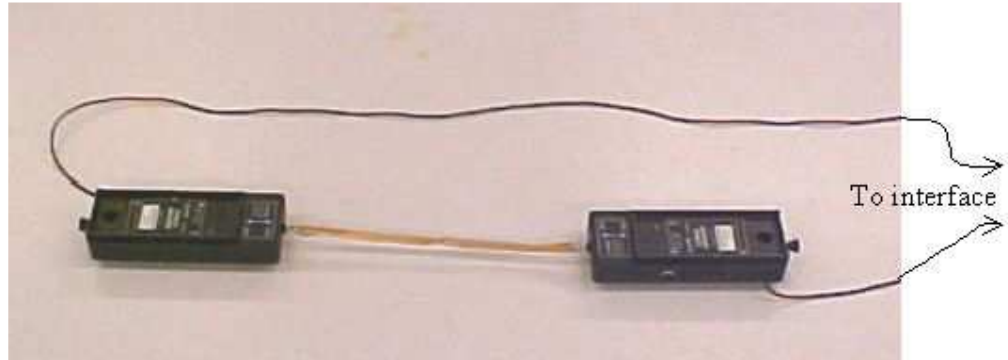


Trying hard to pull differently

Aim: To show (again) the truth of Newton's third law.

Subjects: 1H10 (Action and Reaction)

Diagram:



- Equipment:
- Two force sensors (we use Pasco CI-6537).
 - Rubber band.
 - Data-acquisition via Science Workshop.
 - Beamer to project the monitor screen

Trying hard to pull differently

Presentation: On the monitor two graphs are presented for each force sensor. The software is set in such a way that one of the sensors presents $-F$.
Two demonstrators take each one of the sensors. They start both pulling randomly. The display shows clearly that whatever they do, both force sensors measure the same force: F and $-F$ (see Figure1).

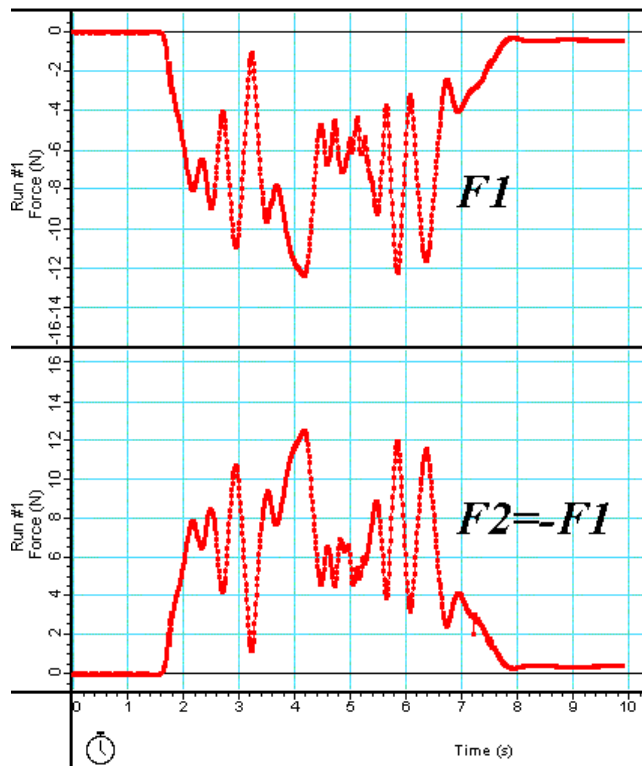


Figure 1

Also when one of the demonstrators holds his force sensor without moving it, while the other demonstrator moves again randomly, then both force sensors registrate an equal F and $-F$. The registration does not reveal which of the two demonstrators is not moving his sensor.

Explanation: Again the truth of Newton's third law is verified.

- Sources:
- [Giancoli, D.G., Physics for scientists and engineers with modern physics](#), pag. 82
 - [Mansfield, M and O'Sullivan, C., Understanding physics](#), pag. 119
 - [McComb, W.D., Dynamics and Relativity](#), pag. 1