

Dynamics and Statics

Let's twist again

(Ireland)

Background

Magnets attract certain metals including key rings.

Thread is spun from multiple fibres.

You will need...

- ✓ A transparent plastic tube (e.g. tube used for holding tennis balls)
- ✓ a strong neodymium magnet,
- ✓ a steel washer,
- ✓ a pencil,
- ✓ a key-ring,
- ✓ strong thread.

Follow these steps

1. Drill a hole at opposite sides of the open end of the tube so as to allow a pencil to act like a crane which can lower the key-ring at the end of a length of thread, towards the magnet which sits at the closed end of the tube.
2. Position the washer outside the bottom of the tube in such a way as to anchor the magnet.
3. Lower the key-ring towards the magnet and observe the behaviour when it gets close.

So what happened?

The ring started to spin rapidly and after a while stopped and spun in the reverse direction...this happened a number of times.

The explanation is that the thread is made by twisting several strands together. Under tension it tends to untwist.

If this happens quickly enough it may temporarily wind a bit in the opposite direction, ultimately causing the key-ring to pause and then spin in the other direction.

What next?

When spinning of the key-ring is in progress, try turning the tube on its side or even upside down.

