

Reducing Uncertainty

Physics

Practical techniques that improve a measurement.

Techniques that genuinely reduce uncertainty.

Random error

Repeat and take a mean

Time 20 oscillations, not one

Measure the largest available quantity

Use a fiducial marker for timing

Use data logging for fast events

Systematic error

Check and correct zero error

Calibrate against a known standard

Avoid parallax with a mirror scale

Account for heat loss to surroundings

Use a control experiment

Repeating never removes systematic error. Only calibration or a change of method will.