Note on Δθ

The angle of the table of the Ball-on-Incline (BoI) experiments - denoted Δθ - can be determined in two ways (thus allowing for cross check).

1. Using a goniometer before and after turning the experiment 180 degrees.

2. Measuring the acceleration before (normal direction, "norm") and after (reverse direction, "rev") turning the experiment 180 degrees, and equating the value for g between the two measurements:

$$\frac{a_{\text{norm}}}{\sin(\theta + \Delta\theta)} = g = \frac{a_{\text{rev}}}{\sin(\theta - \Delta\theta)}$$

As we can measure the acceleration in both configurations and also the angle θ, we have one equation with one unknown, which happen to have an analytical solution:

$$\Delta\theta = \frac{(a_{\text{norm}} - a_{\text{rev}})\sin(\theta)}{(a_{\text{norm}} + a_{\text{rev}})\cos(\theta)}$$