



C-03 Buckling of a Pin-ended Column - Effect of Length (L)

(1 **CT-1** Column Test Pixi Frame; 1 **CB-1** Column Support Bar; 3 **CM-1** Column length/material sets)

Aims: This experiment is designed to allow students to observe the effect that column support length (L) has on the axial force required to buckle a set of columns of the same material for Pinned-Pinned end conditions of support.

Learning Outcomes:

After performing this experiment students will be able to:

- (i) Use the Spreadsheet supplied to compare the experimentally observed buckling load and associated buckling mode shape combination of the simply supported column under test with its theoretical counterpart
- (ii) Identify the buckling load and “effective eccentricity” from a Southwell plot of experimentally obtained data of the applied compressive load and associated deflection of a column
- (iii) Identify the influence support length, L, of the simply supported column from the material selection chosen would have on the buckling load and associated buckling mode shape

Equipment/Resources Required:

- (i) **CT-1** (Column Test Pixi with window frame in “Portrait” configuration), transparent film & pens;
- (i) Specimen set of columns
- (ii) A digital camera (phone cameras are suitable) for simplified Photogrammetry

