# C-02 Buckling of a Pin-ended Column - Effect of Modulus (E)

**(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 material (Young's modulus) has on the axial force required to buckle a set of columns of nominally the same cross-section 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 Young's modulus, I, 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