



C-04 Buckling of a Column - Effect of End-support Conditions - 1 (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, measure and compare the buckling behavior of columns of the same flexural rigidity, (EI), but with different end-conditions support: Pinned-Pinned (P-P); Fixed-Pinned (F-P); Fixed-Fixed (F-F).

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 end-support conditions of the column (chosen from the material/section selection available) 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