# ASTR5 Bending Stress in a Beam
## 橫樑之彎曲應力



**Features:**

- For study of stress distribution across the section of a beam
- High-quality structures teaching module for students of mechanical, civil and structural engineering
- Allows safe and practical experiments into bending stress in a beam
- Realistic and verifiable experiment results
- Optional AII Structures Software package for extra 'virtual' experiments that simulate and confirm the results from your hardware and allow extended experiments
- Optional ASTR2000 unit including AII Structures Software package for automatic data acquisition and virtual experiments
- One of many interchangeable experiment modules from AII modern, flexible and cost-effective Structures teaching system
- Ideal for classroom demonstrations, or students working in pairs or small groups

## Description:

The experiment hardware is a T-beam that fits onto a Structures Test Frame (ASTR1, available separately).

Students adjust a load cell that bends the beam and, when connected to the optional Digital Force Display (ASTR1a, available separately), it measures the bending force (load). Strain gauges and a digital strain bridge measure the strains in the beam. Dummy strain gauges compensate for temperature variation and balance the strain bridges. The equipment includes a lead for connection to the Digital Force Display (ASTR1a, available separately).

The lecturer guide provides details of the equipment including sample experiment results. The student guide describes how to use the equipment and gives experiment procedures.

For extra 'virtual' experiments, AII can supply the optional AII Structures Software (ASTRS), for use on a suitable computer. The virtual experiments simulate the tests that you do with the hardware. They also extend the choice of tests than that available using only the hardware, for example: higher loads, uniform loads or different test specimens. This extends the student's learning experience.

For automatic data acquisition of your experiment results, AII can supply the optional Automatic Data Acquisition Unit (ASTR2000). Supplied as standard with the ASTR2000 is AII Structures Software that displays and logs your experiment results and gives the extra virtual experiments.

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## Specification:

- Standard Features
  - Supplied with lecturer guide and student guide
  - Two-year warranty
  - Made in accordance with the latest European Union directives

- Experiments
  Study of:
  - Second moment of area
  - Converting strains to stresses
  - Strain gauges
  - The neutral axis
  - The bending equation

- Essential Ancillaries
  - Structures Test Frame (ASTR1)
  - Digital Force Display (ASTR1a)

- Recommended Ancillaries
  - Structures Software (ASTRS) for virtual experiments **or**
  - Automatic Data Acquisition Unit (ASTR2000) for automatic data acquisition and virtual experiments

- Operating Conditions
  - Operating environment: Laboratory environment
  - Storage temperature range:
    −25°C to +55°C (when packed for transport)
  - Operating temperature range:
    +5°C to +40°C
  - Operating relative humidity range:
    80% at temperatures < 31 °C decreasing linearly to 50% at 40°C

- Specification
  - Nett dimensions and weight:
    880 x 210 x 100 mm, 6.5 kg
  - Packed dimensions and weight:
    Approximately 0.075 m3, 8 kg
  - Load:
    Adjustable 0 to 500 N load cell with electronic force sensor
  - Test beam: Aluminium T-section
  - Strain measurement:
    Nine strain gauges (with nine dummy gauges) and a 16- way digital strain bridge
  - Accessories: Vernier