ASTR13 Continuous and Indeterminate Beams

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Features:

- Versatile equipment for a wide variety of beam experiments, from simple cases to complex problems
- High-quality structures teaching module for students of mechanical, civil and structural engineering
- Allows safe and practical experiments into continuous and indeterminate beams
- Realistic and verifiable experiment results
- Optional AII's 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's Structures Software package for automatic data acquisition and virtual experiments
- One of many interchangeable experiment modules from AII's modern, flexible and cost-effective Structures teaching system
- Ideal for classroom demonstrations, or students working in pairs or small groups

Description:

The experiment hardware fits onto a Multi Structures Test Frame (ASTR1, available separately). Students rest a beam on up to three 'piers'. The piers are movable, so students can arrange them in many different positions under the beam. Students use masses on weight hangers to load the beam. They can also attach the flexible beam to a backboard to measure deflection or fixing moment.

The piers each contain a load cell to measure vertical reactions. These connect to a Multi-Channel Digital Transducer Display (ASTR1 a, available separately). Two of the load cells have knife-edge supports, which students can either fix or allow to sink by a set displacement. The third pier load cell allows students to either clamp the beam (encastré fixing) or rest the beam on a knife edge. The unique design of this equipment allows the load cell to resist the bending moment while accurately measuring the vertical reaction. To measure beam deflection, the backboard has a digital indicator which students move along the beam. The backboard also has a mechanism for measuring the fixing moment of a propped cantilever or a fixed beam.

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Specification:

- Standard Features
  Supplied with lecturer guide and student guide

- Essential Ancillaries
  - Multi Structures Test Frame (ASTR1)
  - Multi-Channel Digital Transducer Display (ASTR1a)

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

- Experiments
  - Reactions of a simply supported beam
  - Reactions of a two-span continuous beam
  - Reactions and fixing moments of a fixed beam and a propped cantilever
  - Reaction and fixing moment of a propped cantilever with a sinking support
  - Relationship between load and deflection for beams and cantilevers
  - This equipment allows many possible experiment configurations, using a stiff (rigid) beam, or a significantly more flexible beam.

- Operating Conditions
  +5°C to +40°C

- Dimensions
  880 x 180 x 150 mm ± 15%

- Test beams
  - One aluminum alloy ‘rigid’ beam with a scale
  - One aluminum alloy ‘flexible’ beam

- Load cells
  - Two 10 N electronic load cells with sinking knife edges
  - One 10 N electronic load cell with a knife edge and clamped fixing

- Load application
  - Five knife edges
  - Five weight hangers
  - 200 x 10 g masses

- Accessories
  Rule, vernier, four leads to connect to a Multi-Channel Digital Transducer Display (ASTR1a)