Discrete & Continuous Modelling • MACM202 • Lab Report for Week #10

- usual lab report format.
- the TAs tell me that there have been major page limit infractions. Please keep to the spirit of conciseness.
- due in the MACM202 box Monday 17 March (green ink not required).
- relate your construction issues & discover some design principles.

Computing Tips

- if you're really keen, you are allowed to adjust the grid spacing of the truss editor. Right now, it's set to 1/2 spacing but 1/3 would give you more flexibility of construction!
- black art: I must admit to having no understanding at all about when it is OK to cross struts. My suspension bridge had crossing cables and was perfectly happy.

Design #1

- page limit: 2 pages typeset + 1-2 pages annotated graphics.
- rules (as of 12 March lecture):

  1] three kinds of struts
  a) regular struts, max length 2 units,
  b) cable struts, max length 6 units, must be under tension (even with the wind blowing!),
  c) ground struts (along the ground), no length limitation, does not count in force evaluation.

  2] size constraints
  a) height, max 10 units,
  b) width, max 6 units,
  c) bell height, min 8 units.

  3] design evaluation
  a) total length of all non-ground struts,
  b) regular strut, max |force|,
  c) cable strut, max |tension|.
- your observations/conclusions should address design problems you encountered/solved/avoided, and any design principles you discovered.

Design #2

- page limit: 1 page typeset + 1-2 page annotated graphics.
- to your tower (from Design #1), apply simple wind loading as described in the 12 March lecture.
- you may add an extra page should you be willing to compare total wind loading of (50%, 100% and 200% of the bell weight).
- provide force evaluation as above.

Optional Truss Design

- 2 pages graphics.
- hand in under separate cover. Award for best concept.