

truss analysis



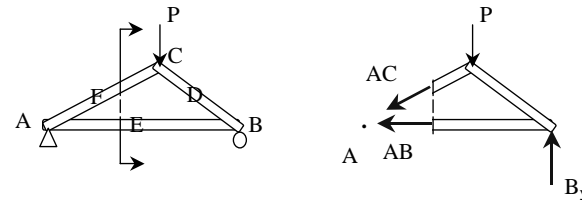
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Trusses 1
 Lecture 8

Method of Sections

- relies on internal forces being in equilibrium on a section
- cut to expose 3 or less members
- coplanar forces $\rightarrow \sum M = 0$ too



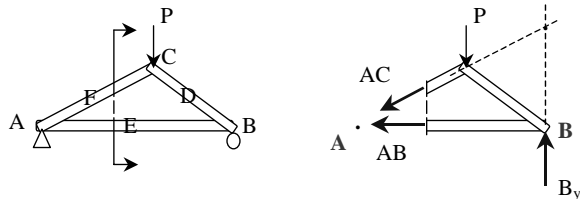
Trusses 10

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Method of Sections

- joints on or off the section are good to sum moments
- quick for few members
- not always obvious where to cut or sum



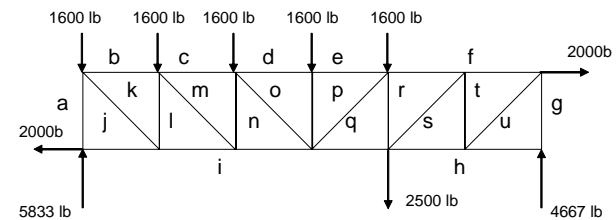
Trusses 11

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Graphical Analysis

- lettering rules (Bow's notation)
- draw a force polygon of known loads and reaction forces



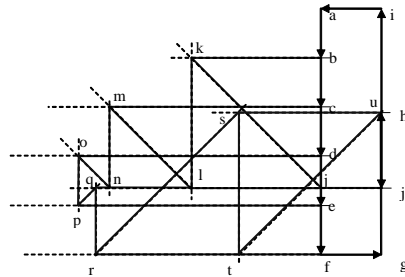
Trusses 4
 Lecture 7

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Graphical Analysis

- draw reference directions for members and find intersections
- measure and determine C or T
- follow steps!
- learn by example



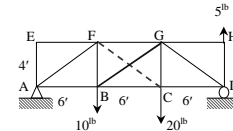
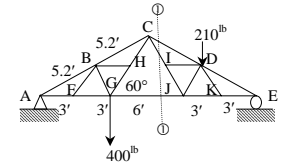
Trusses 5
Lecture 7

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Other Trusses

- compound truss
 - simple trusses with more links
 - might have pins in middle of members
- statically indeterminate
 - too many members
 - constrained
 - diagonal tension counters



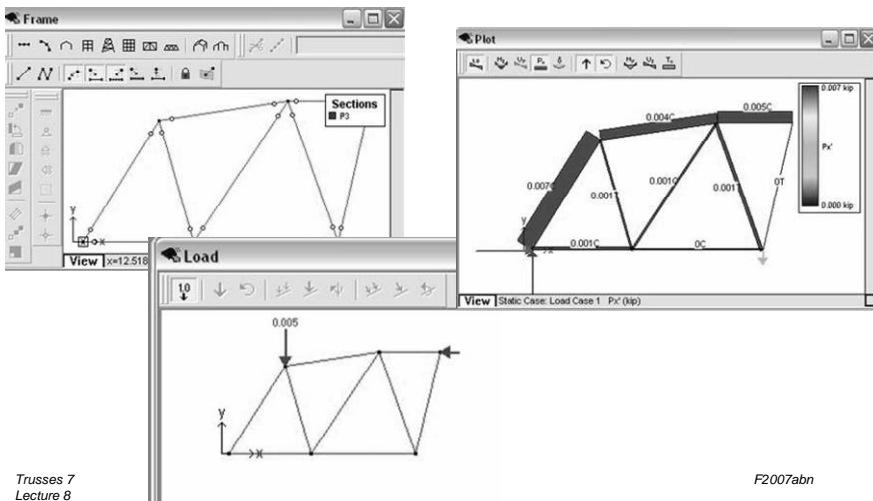
Trusses 12

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Tools – Multiframe4D

- in computer lab

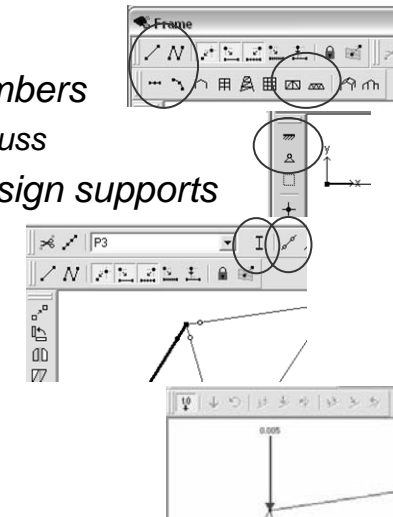


Trusses 7
Lecture 8

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Tools – Multiframe4D

- frame window
 - define truss members
 - or pre-defined truss
 - select points, assign supports
 - select members, assign section & assign pin ends
- load window
 - select points, add point load



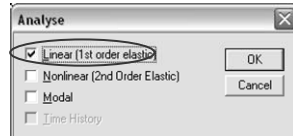
Trusses 8
Lecture 8

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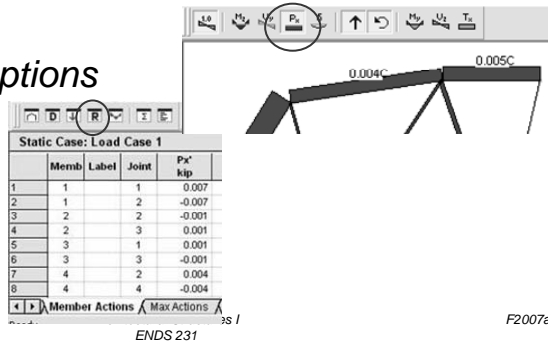
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Tools – Multiframe4D

- to run analysis choose
 - case menu
 - Analyse...
 - Linear (1st order elastic)



- plot
 - choose options
- results
 - choose options



Static Case: Load Case 1				
	Membr	Label	Joint	Px kip
1	1		1	0.007
2	1		2	-0.007
3	2		2	-0.001
4	2		3	0.001
5	3		1	0.001
6	3		3	-0.001
7	4		2	0.004
8	4		4	-0.004