521 M7410 –Adjustment and Analysis of Spatial Information

Fall Semester 2015

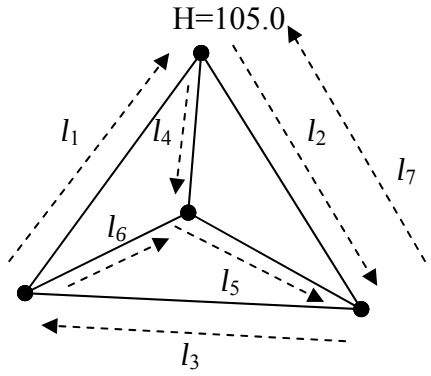
Homework No. 2

handed out Thursday, October 01, 2015
due Thursday, October 08, 2015, 09:10 **Name:** _____

LSQ Fundamentals – Adjustment by Observations Only

1. Adjust the following leveling network with Observations Only method.

   - What are n, n_0, and r in this model?
   - Compute the residuals and adjusted observables by a long-hand approach.
   - Compute the residuals and adjusted observables by a matrix approach.
   - What are the σ_0 and $\hat{\sigma}_0$ values?
   - What will happen if you choose a different σ_0 value (for instance, double the value) in your adjustment computation.
   - What will happen if you choose a different weight scheme (for instance, $w_i \propto 1/\sigma_i$)?
   - Is there any assumption inherent in your computation?



#	l	σ
1	1.2	0.5
2	2.4	0.1
3	-3.7	0.1
4	-0.4	0.3
5	2.8	0.2
6	1.1	0.3
7	-2.4	0.1

2. Can you apply the O.O. approach to the problem described in HW00? If positive, how?

Your (individual) final report should contain (use A4 papers):

- this page as the cover sheet
- source code(s) and outputs; do not forget to add your name and lots of comment cards to the source listing (% .....)
- input and output files from program [input/output values used and calculated], if any
- plots, including captions on axes, title, your name, LB#/HM#, course title, date (if any)
- derivation and description of formulas used, accompanied by figures where applicable
- evidence of computational accuracy
- discussion of results