HACETTEPE UNIVERSITY
DEPARTMENT OF
GEOMATICS ENGINEERING

GMT202

ADJUSTMENT COMPUTATION & PARAMETER ESTIMATION

2021-2022 SPRING TERM

ASSIGNMENT 2

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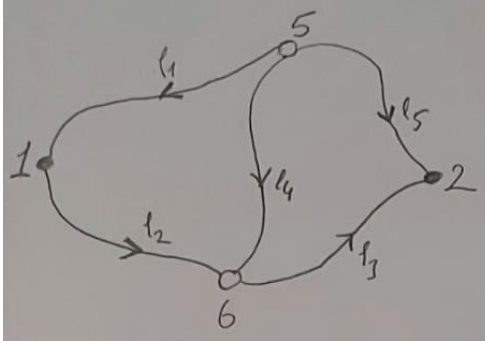
Assignment-2

Linear Observation Equations of Levelling Networks



$$L + v = f(x)$$

$$v = \frac{\partial f}{\partial x}\Big|_{x_0} \cdot \delta x - [L - f(x_0)]$$

First observation equations ;

$l_1 + v_1 = H_1 - H_5$

$H_1 = H_1^\circ + \delta H_1$

$H_5 = H_5^\circ + \delta H_5$

① $v_1 = \delta H_1 - \delta H_5 - [l_1 - (H_1^\circ - H_5^\circ)]$

② $v_2 = \delta H_6 - \delta H_1 - [l_2 - (H_6^\circ - H_1^\circ)]$

③ $v_3 = \delta H_2 - \delta H_6 - [l_3 - (H_2^\circ - H_6^\circ)]$

$\Rightarrow$ ④ $v_4 = \delta H_6 - \delta H_5 - [l_4 - (H_6^\circ - H_5^\circ)]$

$\Rightarrow$ ⑤ $v_5 = \delta H_2 - \delta H_5 - [l_5 - (H_2^\circ - H_5^\circ)]$

$\Rightarrow$ ④ $l_4 + v_4 = H_6^\circ + \delta H_6 - H_5^\circ - \delta H_5 \Rightarrow v_4 = \delta H_6 - \delta H_5 - [l_4 - (H_6^\circ - H_5^\circ)]$

$\Rightarrow$ ⑤ $l_5 + v_5 = H_2^\circ + \delta H_2 - H_5^\circ - \delta H_5 \Rightarrow v_5 = \delta H_2 - \delta H_5 - [l_5 - (H_2^\circ - H_5^\circ)]$

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