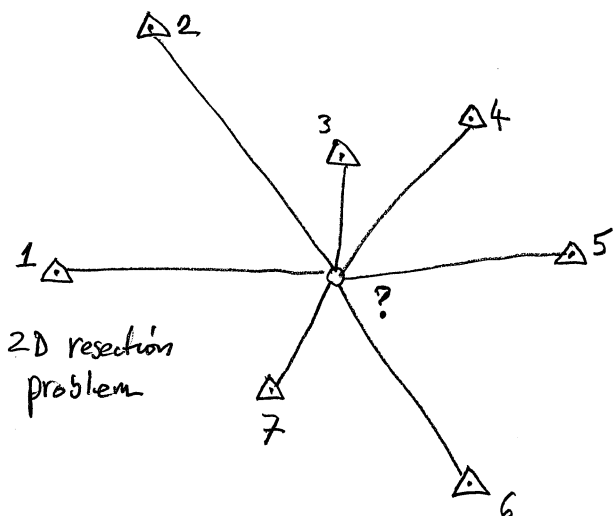


1.

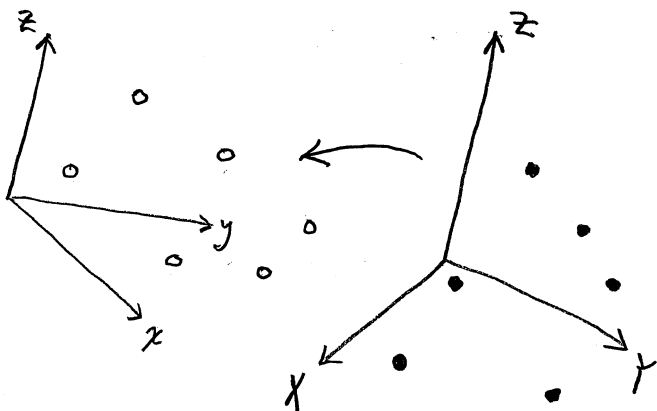


CP	obs. dist.	X	Y
1	45.109	10.0	30.0
2	49.665	20.0	70.0
3	15.913	50.0	50.0
4	29.125	70.0	60.0
5	25.406	80.0	40.0
6	29.070	70.0	10.0
7	15.911	50.0	20.0

$\sigma_d = 0.15$

Find coordinates of unknown point by LS.

2.



#	x	y	z	X	Y	Z
1	6.122	0.372	1.696	1.0	1.0	1.0
2	7.043	-2.252	1.064	4.0	1.0	0.5
3	8.808	1.485	2.324	1.0	4.0	2.0
4	9.965	-1.330	-0.621	4.0	4.0	-1.0
5	8.576	-0.510	-0.279	3.0	3.0	-0.5
6	9.258	-0.984	1.301	3.5	3.5	1.0

Sketch is just a "concept", don't estimate parameters from sketch.

ω, ϕ are $< 2^\circ$, $\lambda \approx 1$,

Suggestion for initial approx: plot x, y and X, Y and estimate the z -rotation, then use 1 point to solve for t_x, t_y, t_z approximations

$\sigma_x = \sigma_y = \sigma_z = 0.10$, x, y, z : observations, X, Y, Z : constants

Model is
$$\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \lambda M \begin{bmatrix} X \\ Y \\ Z \end{bmatrix} + \begin{bmatrix} t_x \\ t_y \\ t_z \end{bmatrix}$$

Solve for the transf. parameters by L.S.