Version-2

→ The problem is, for the no of sources > 6, we are n't getting right tis after section 2.1 code, i.e, calctod code.

→ Why?

- The reason is,

* Let's take an example of 9 sources & 8 Mics in ~~open space~~.

* We run the calctod code in groups of 4, for every combination, & store them in Ti_vec table/matrix & apply the mode on it.

* Other source's Tis, other than the four will be given 0s in the Ti_Vec table.

*

S1	S2	S3	S4	S5	S6	S7	S8	S9
Fix								
Fix								
Fix								
1								
Fix								
0								
0								
0								
0								

→ No. of combinations having $S_1 = {}^8C_3 = 56$

∴ In S_1 row, 56 non-zero values (mostly true values) & 70 zeros.

→ Total no. of combinations $= {}^9C_4 = 126$.

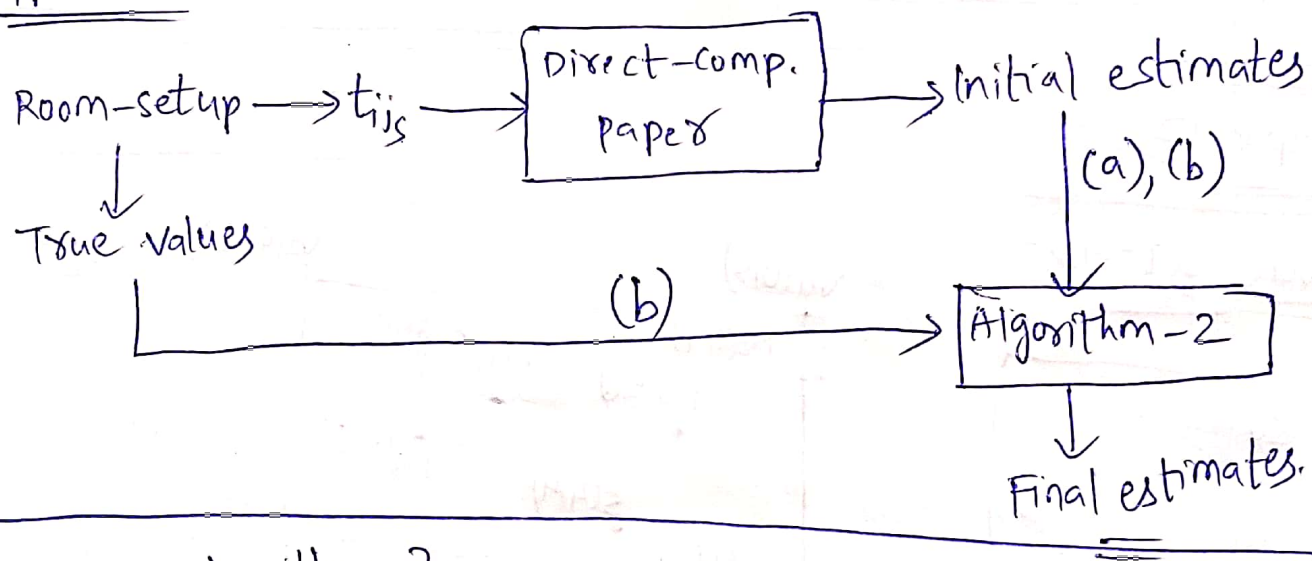
* So, by mode function, we are getting the tis to be 0s.

* What can be done?

Taking the mode of non-zero values for every source will do good.

Here, are few examples.

Approach:-



Note:- In algorithm 2)

i) (a) → case (a) : setting the shaded regions to initial estimates

ii) (b) → case (b) : setting the shaded regions to True values.

Formulas:-

i) Intermediate rel. error = $\dfrac{\| \text{True EDM} - \text{EDM after direct-comp paper (Inital estimats)} \|_F}{\| \text{True EDM} \|_F}$

ii) Final rel.error = $\dfrac{\| \text{True EDM} - \text{EDM after Algorithm 2 (Final estimates)} \|_F}{\| \text{True EDM} \|_F}$

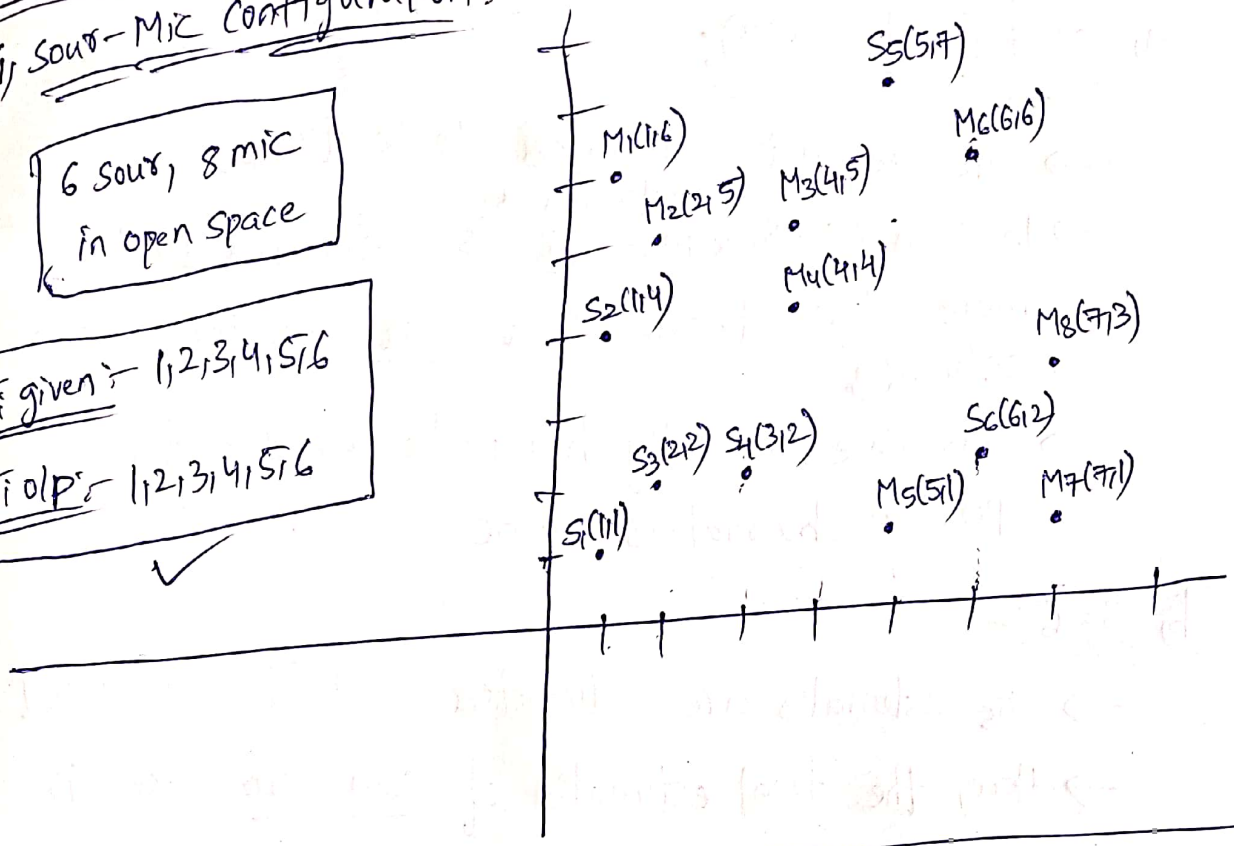
Example (1):-

i) Sour-Mic Configuration:-

6 sour, 8 mic in open space

Ti given:- 1,2,3,4,5,6

Ti o/p:- 1,2,3,4,5,6 ✓



ii) Results:-

a)

Shaded Regions	Intermediate Rel.error	Final Rel.error
mic-mic	0.7072	0.7072
Sour-mic	0.7072	0.7072
Sour-sour	0.7072	0.7072

Script 1

b)

Shaded Regions	Intermediate Rel.error	Final Rel.error
mic-mic	0.7072	0.6570
Sour-mic	0.7072	0.0635
Sour-sour	0.7072	0.7072

Script 2

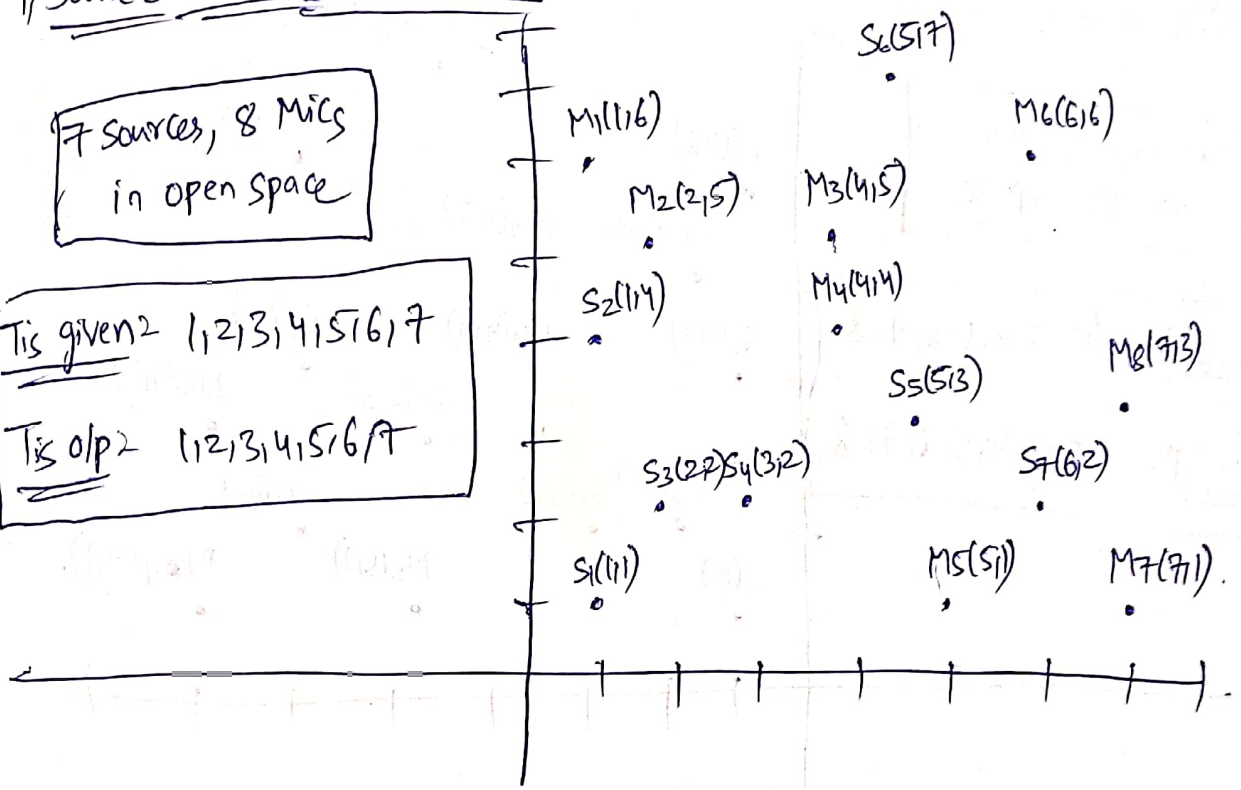
Example (2) :-

i) Source - Mic configuration :-

7 sources, 8 Mics in open space

Tis given :- 1,2,3,4,5,6,7

Tis o/p :- 1,2,3,4,5,6,7



ii) Results :-

a)

Shaded Regions	Intermediate Rel. error	Final Rel. error
Mic - Mic	0.6998	0.6998
Sour - Mic	0.6998	0.6998
Sour - Sour	0.6998	0.6998

Script 1

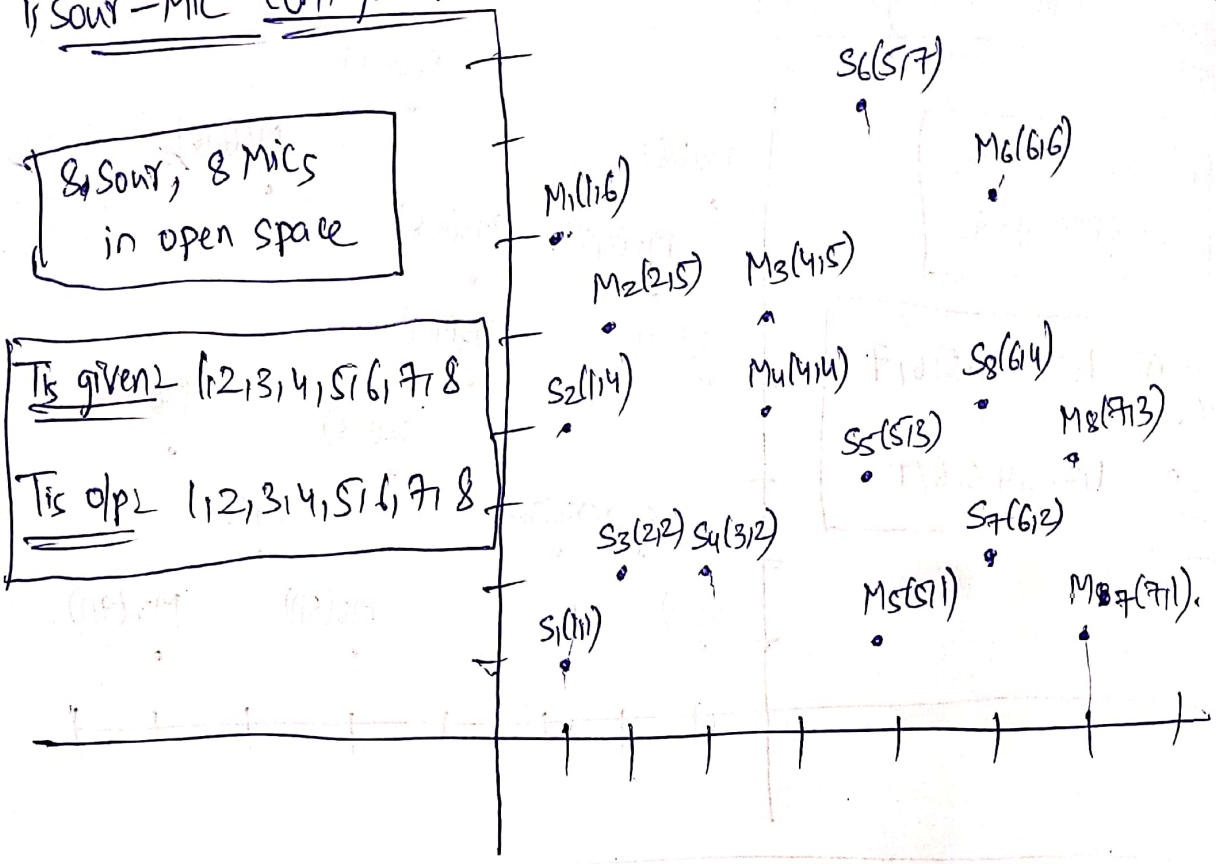
b)

Shaded Regions	Intermediate Rel. error	Final Rel. error
Mic - Mic	0.6998	0.6467
Sour - Mic	0.6998	0.0365
Sour - Sour	0.6998	0.6998

Script 2

Example (3):-

i) Sour-Mic configuration:



ii) Results:

a)

Shaded Regions	Intermediate Rel. error	Final Rel. error
mic-mic	0.6871	0.6871
Sour-mic	0.6871	0.6871
Sour-Sour	0.6871	0.6871

script 1

b)

Shaded Regions	Intermediate Rel. error	Final Rel. error
mic-mic	0.6871	0.6336
Sour-mic	0.6871	0.0351
Sour-Sour	0.6871	0.6871

script 2

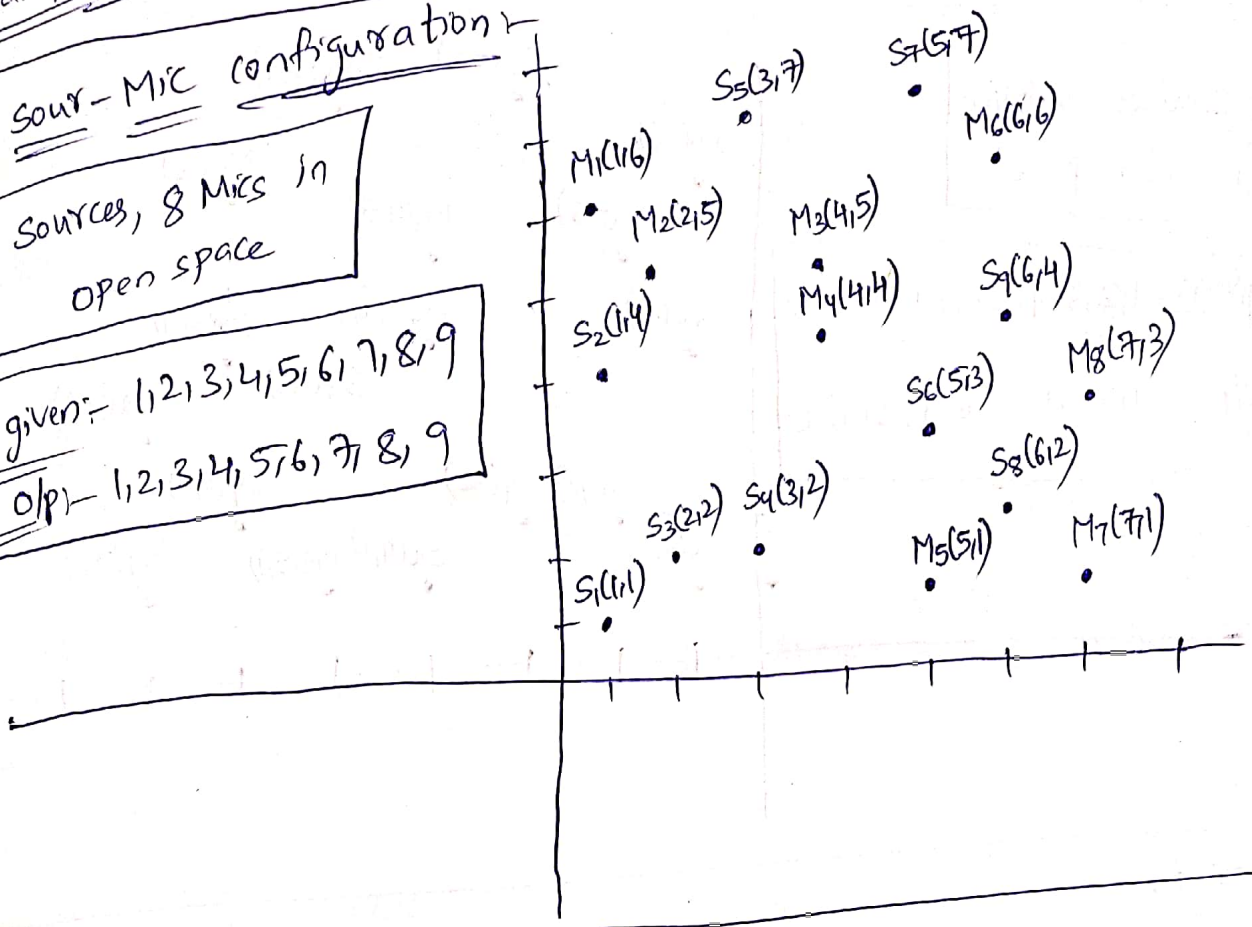
Example (4):

i) Sour-Mic configuration:-

9 sources, 8 Mics in open space

Ti given:- 1,2,3,4,5,6,7,8,9

Ti o/p:- 1,2,3,4,5,6,7,8,9



ii) Results:-

a)

Shaded Regions	Intermediate Rel. error	Final Rel. error
mic - mic	0.7042	0.7042
Sour-mic	0.7042	0.7042
Sour-Sour	0.7042	0.7042

script 1

b)

shaded Regions	Intermediate Rel. error	Final Rel. error
mic-mic	0.7042	0.7012
Sour - mic	0.7042	0.0240
sour -sour	0.7042	0.7042

script 2

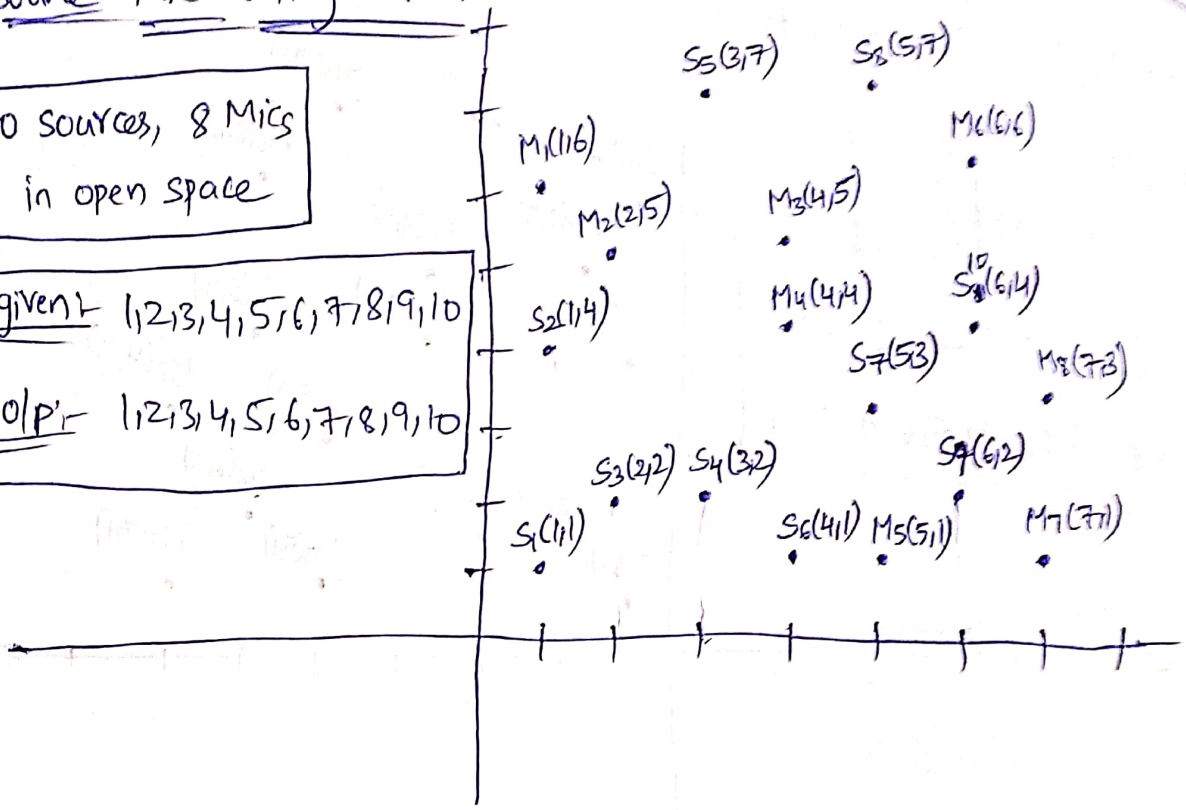
Example (5)

i) Source-Mic configuration :-

10 sources, 8 Mics in open space

Ti given :- 1,2,3,4,5,6,7,8,9,10

Ti o/p :- 1,2,3,4,5,6,7,8,9,10



ii) Results :-

a)

Shaded Regions	Intermediate Rel. error	Final Rel. error
Mic-Mic	0.6839	0.6839
Sour-Mic	0.6839	0.6839
Sour-Sour	0.6839	0.6839

Script 1

b)

Shaded Regions	Intermediate Rel. error	Final Rel. error
Mic-Mic	0.6839	0.6860
Sour-Mic	0.6839	0.0242
Sour-Sour	0.6839	0.6839

Script 2

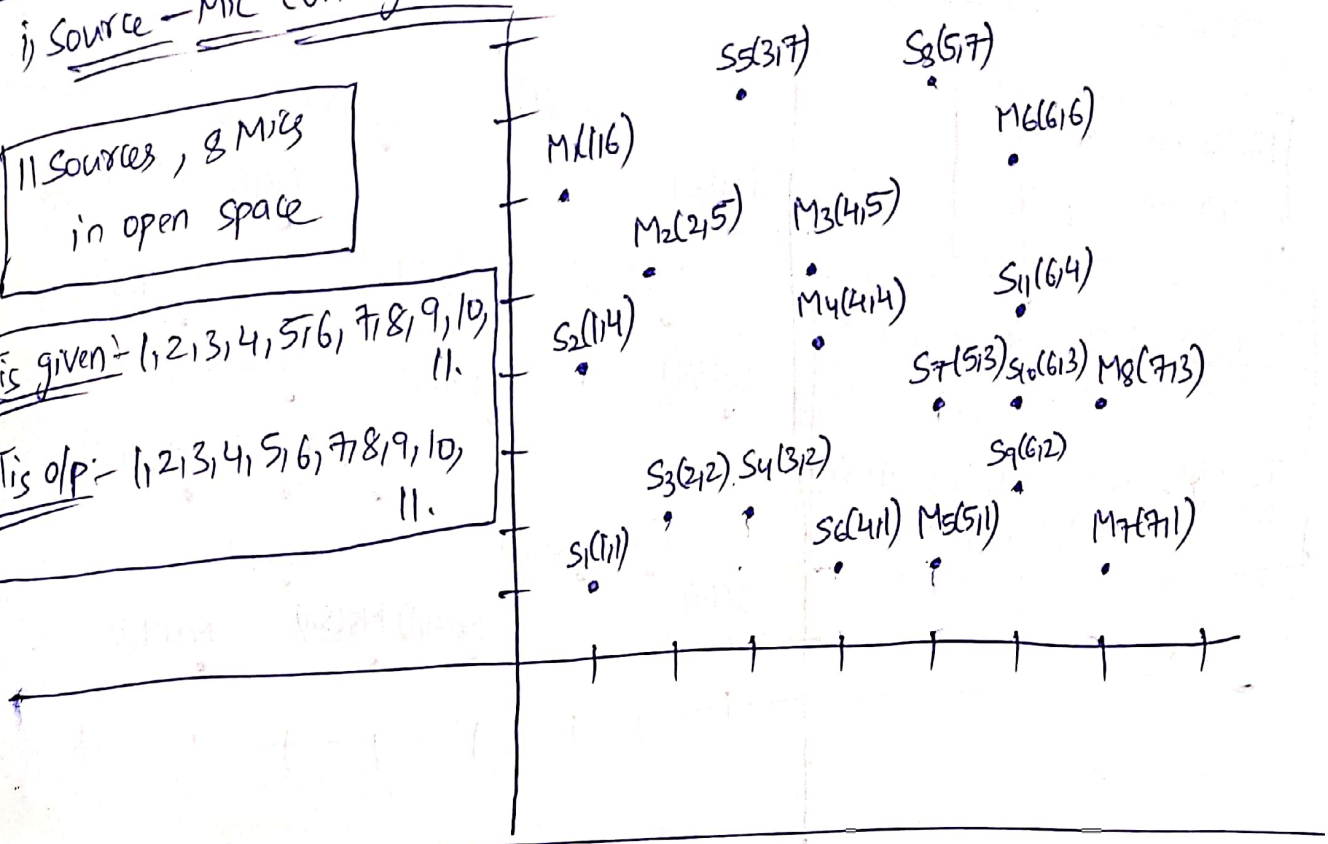
Example (6):-

i) Source – Mic configuration:-

11 Sources, 8 Mics in open space

Tis given:- 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.

Tis o/p:- 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11.



ii) Results:-

a)

Shaded Regions	Intermediate Rel. error	Final Rel. error	
mic-mic	0.6767	0.6767	script 1
sour-mic	0.6767	0.6767	
sour-sour	0.6767	0.6767	

b)

Shaded Regions	Intermediate Rel. error	Final Rel. error	
mic-mic	0.6767	~~0.6767~~ 0.6810	script 2
sour-mic	0.6767	0.0235	
sour-sour	0.6767	0.6767	

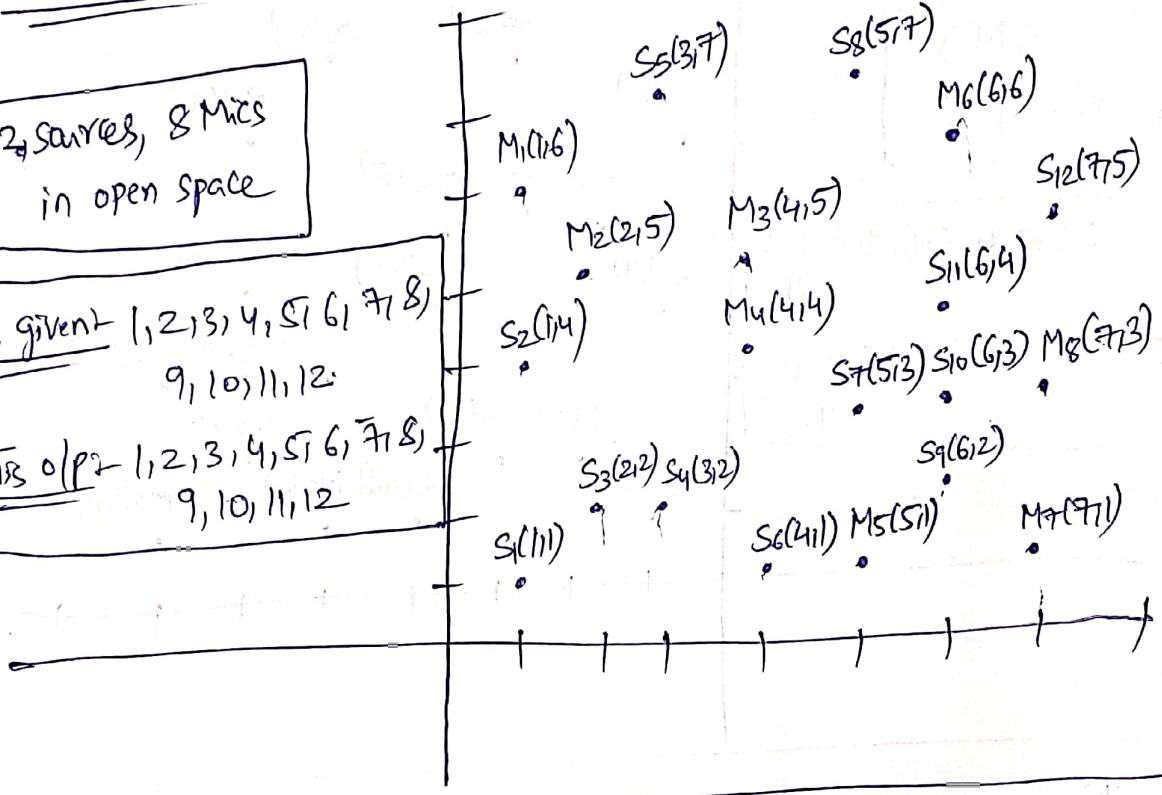
Example (7) :-

i) Sour-Mic Configuration:

12 sources, 8 Mics in open space

Tis given:- 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12.

Tis o/p:- 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12



ii) Results:-

a)

Shaded Regions	Intermediate Rel. error	Final Rel. error
mic-mic	0.6519	0.6519
sour-mic	0.6519	0.6519
sour-sour	0.6519	0.6519

script 1

b)

Shaded Regions	Intermediate Rel. error	Final Rel. error
mic-mic	0.6519	0.6591
sour-mic	0.6519	0.0227
sour-sour	0.6519	0.6519

script 2

Conclusion:-

For any number of sources & mics,

① Through approach (a),

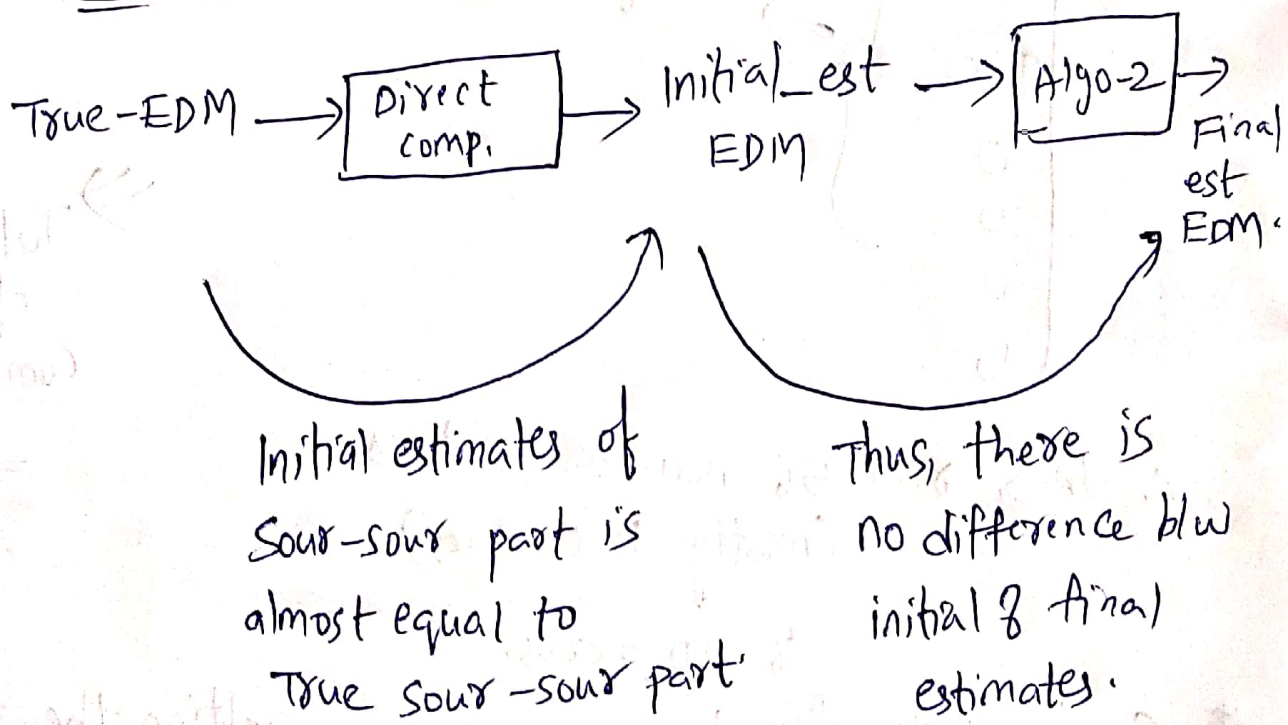
There's no improvement in result after applying algorithm (2), as it runs & forms the same EDM in every iteration, by alternating descent method.

② Through approach (b),

i) Fix Sour-mic part:-

Results are converging well to true EDM.

ii) Fix Sour-Sour part:-



So, as Direct-comp paper is recovering sour-sour well, sour-sour part is accurately estimated. So, the relative error related to sour-sour code is all due to difference in mic-mic & sour-mic parts.

The reason why is it happening has to be worked on.

iii) Fix mic-mic part:-

Compared to initial estimate EDM, the Final EDM is sometimes improving & sometimes worsening, in terms of relative error. (i.e, comparision between rel_err-final & rel-err_intermediate).
