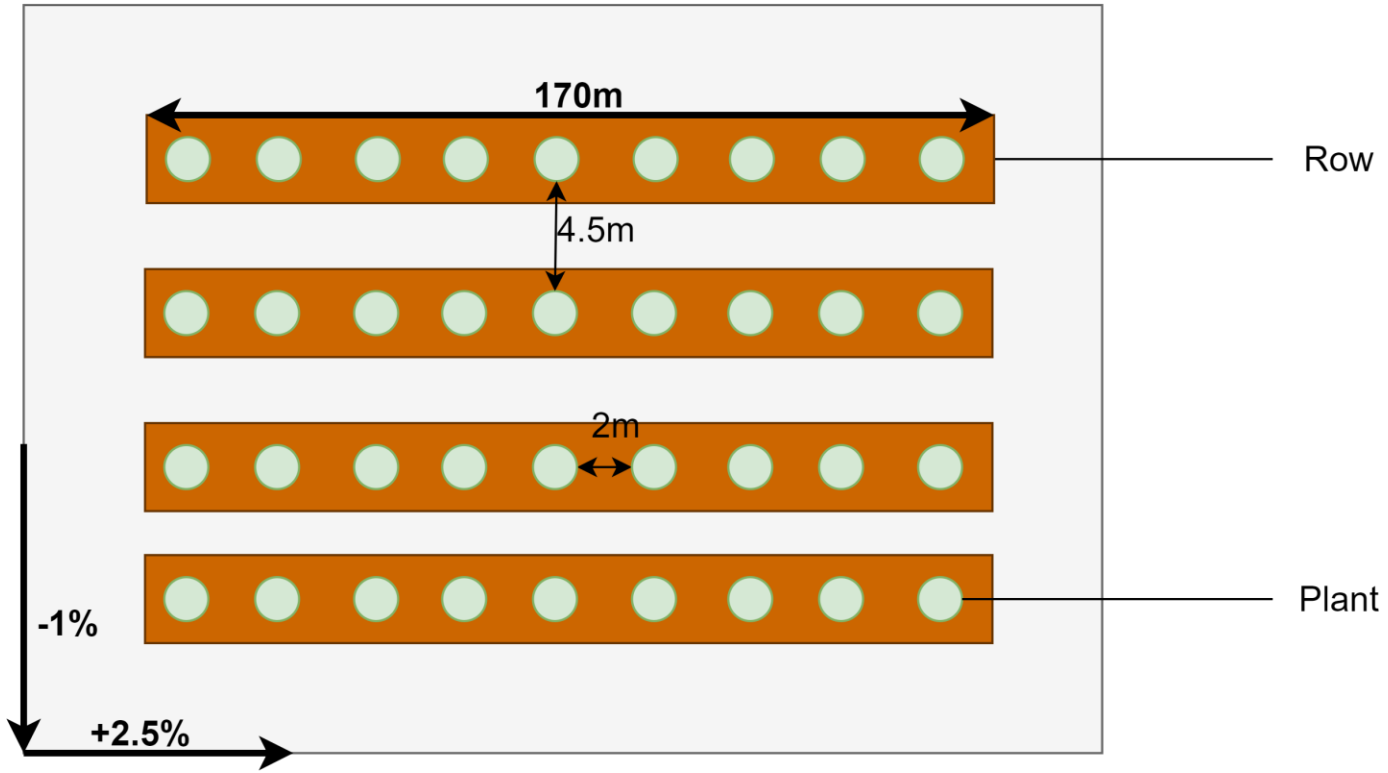
Fondo ERRANO

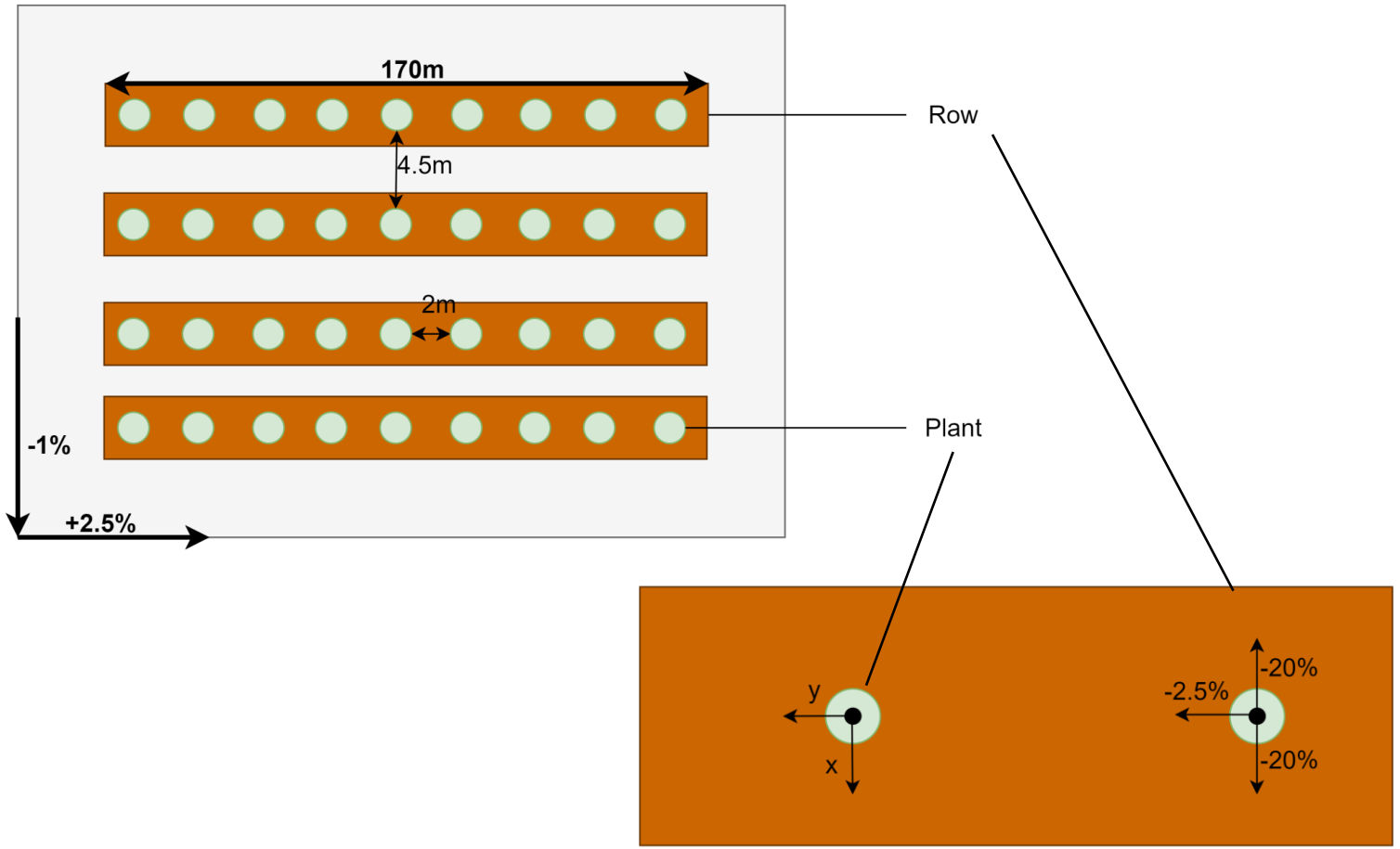
About the implant

General



- In meters we indicate the distances
- In percentage we indicate the differences in height

Zoom-in



- In meters we indicate the distances
- In percentage we indicate the slopes

Some more specific info

- **Water table**
  - 6m to 8m (depending on the season)
- **Dripline pitch**
  - Single-pipeline: 66cm
  - Double-pipeline:
    - The side we have the sensors: 50cm
    - The other side: 60cm
- **Drippers flow rate**
  - Single-pipeline: 4L/h
  - Double-pipeline: 2.3L/h
- **Implant age:**
  - 9/10 years old

About plants and roots

- **Soil texture**
  - Sand: 45%
  - Silt: 35%
  - Clay: 20%
- **Soil horizons**
  - The first 4/5 meters: the soil with the above-described texture
  - Below: gravel mixed with sand
- **Roots**
  - In the first 60 cm of soil
- **Plants height:**
  - 160cm

About the measured data

Measured Data

Every hour	Air **temperature (°C)**
Every hour	Air **humidity (%)**
Every hour	Wind **speed (Km/h)**
Every hour	Solar **radiation (W/mq)**
Every hour	Precipitation **(mm)**
Every minute	Irrigation **(L)**
Every 15 minutes	Ground **water (cbar)**

Air temperature, air humidity, wind speed, and solar radiations

Format: (timestamp, value)

- The value column is the average value measured from that timestamp to the next one

Example with air temperature:

- from 11:00 to 12:00 we had on average 21.72 °C
- from 12:00 to 13:00 we had on average 20.15 °C
- from 13:00 to 14:00 we had on average 21.94°C
- from 14:00 to 15:00 we had on average 23.2°C

timestamp	value
1632042000 (19 September 2021 11:00)	21.72
1632045600 (19 September 2021 12:00)	20.15
1632049200 (19 September 2021 13:00)	21.94
1632052800 (19 September 2021 14:00)	23.2

Precipitation

Format: (timestamp, value)

- The value column is the quantity that dropped until the next hour

Example:

- from 11:00 to 12:00 2 mm had fallen
- from 12:00 to 13:00 0.4 mm had fallen
- from 13:00 to 14:00 0 mm had fallen
- from 14:00 to 15:00 0 mm had fallen

timestamp	value
1632042000 (19 September 2021 11:00)	2
1632045600 (19 September 2021 12:00)	0.4
1632049200 (19 September 2021 13:00)	0
1632052800 (19 September 2021 14:00)	0

Irrigation

Format: (timestamp, value)

- The value column is the quantity that dropped until the next hour

Example:

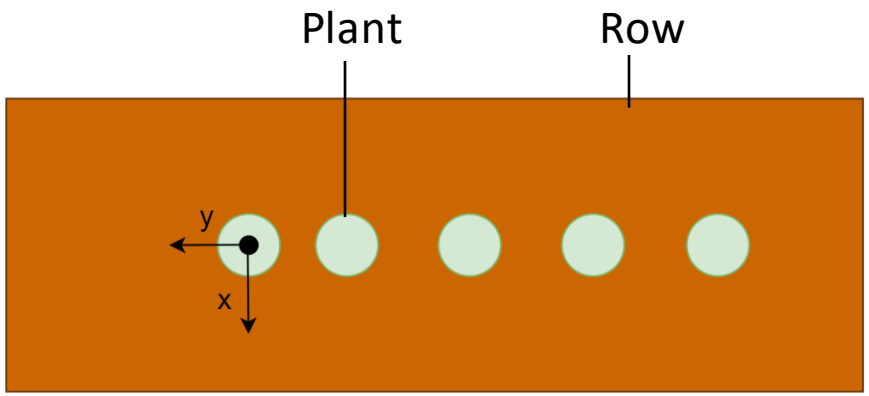
- from 11:01 to 12:02 each dripper erogates 0.07 L
- from 11:02 to 11:03 each dripper erogates 0.07 L
- from 11:03 to 11:04 each dripper erogates 0.07 L
- from 11:04 to 11:05 each dripper erogates 0.07 L

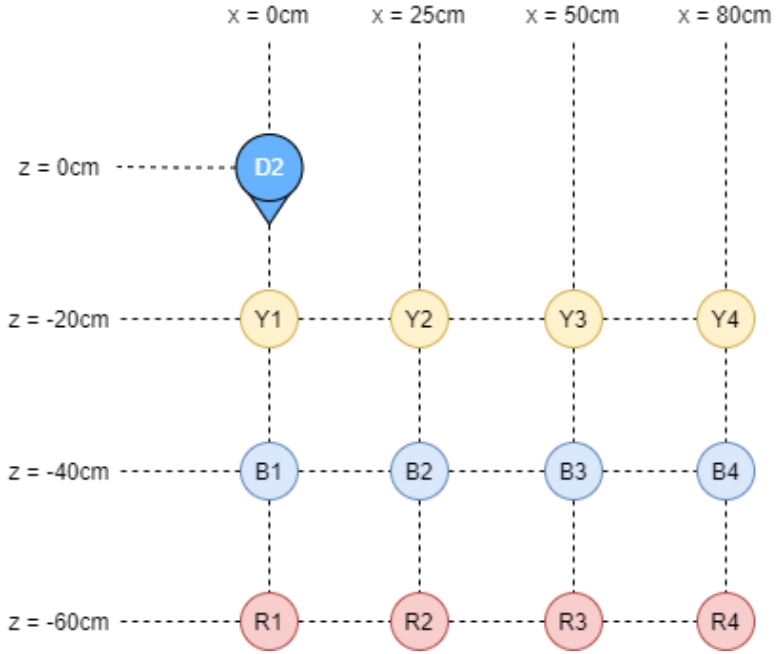
timestamp	value
1632042000 (19 September 2021 11:01)	0.07
1632045600 (19 September 2021 11:02)	0.07
1632049200 (19 September 2021 11:03)	0
1632052800 (19 September 2021 11:04)	0

Ground potential

Format: (timestamp, z, y, x, value)

- The value column is the ground potential in the coordinates (z, y, x) in such a precise timestamp
- (z, y, x) are centered in a specific dripper (go to the layouts section)



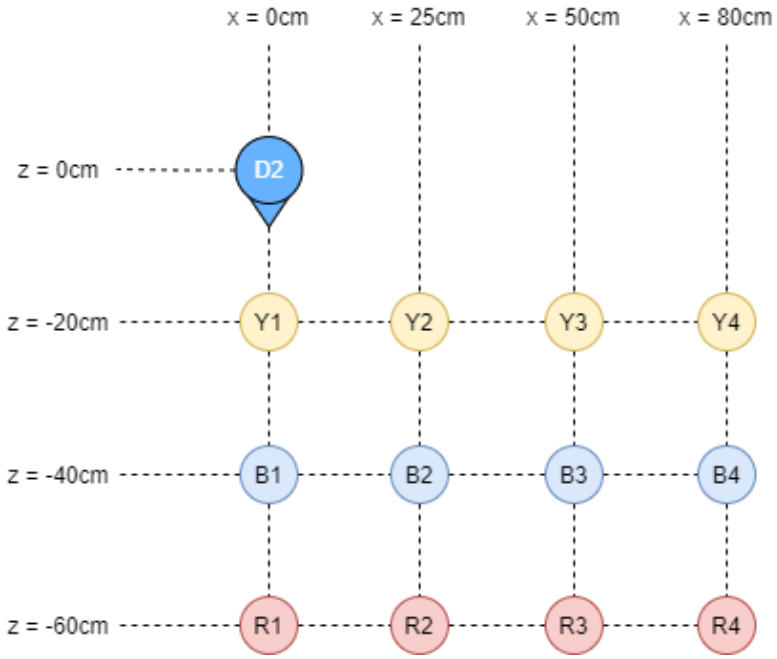


Ground potential

timestamp	z	y	x	value
1632042000 (19 September 2021 11:00)	-60	0	0	-47.60
1632045600 (19 September 2021 11:15)	-60	0	0	-48.22
1632049200 (19 September 2021 11:30)	-60	0	0	-48.56
1632052800 (19 September 2021 11:45)	-60	0	0	-48.89

Example:

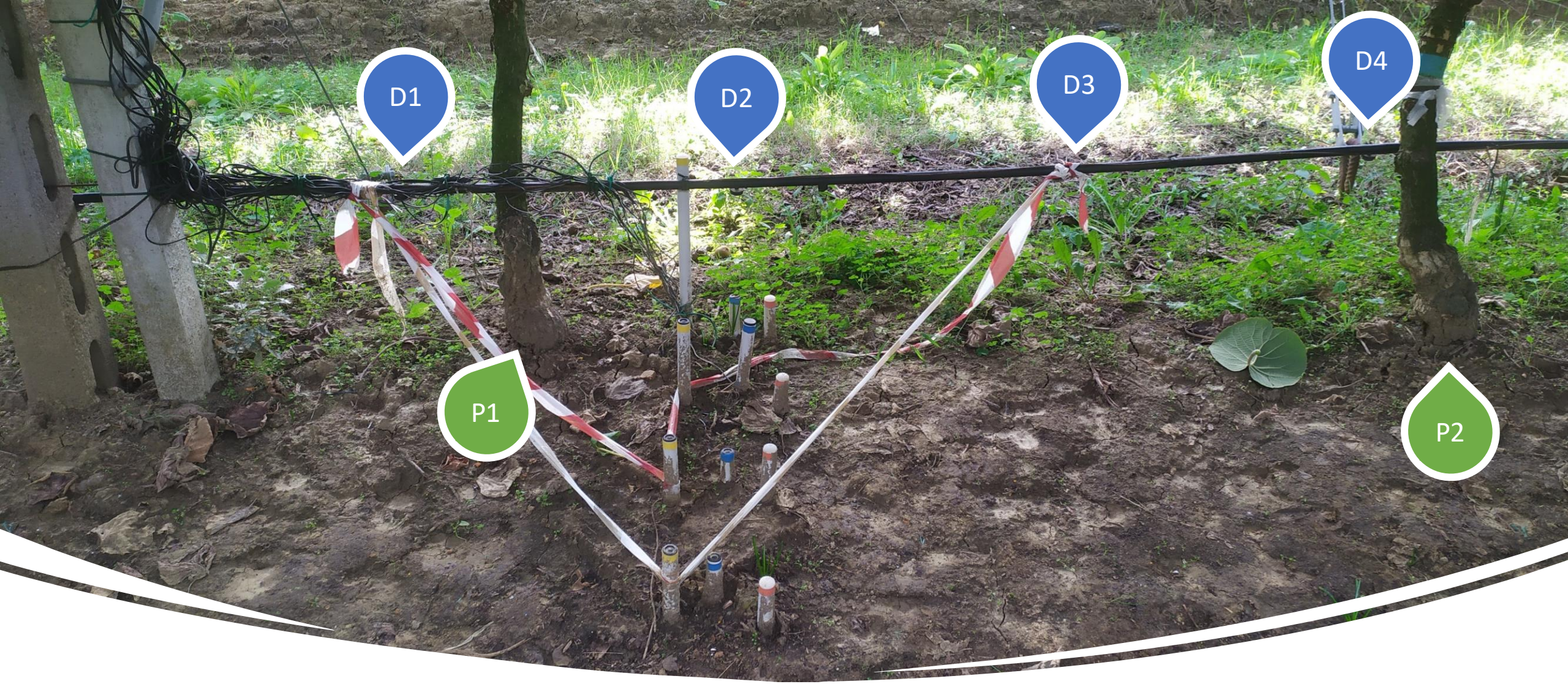
- the sensor R1 at 11:00 measured –47.60 cbar
- the sensor R1 at 11:00 measured –48.22 cbar
- the sensor R1 at 11:00 measured –48.56 cbar
- the sensor R1 at 11:00 measured –48.89 cbar



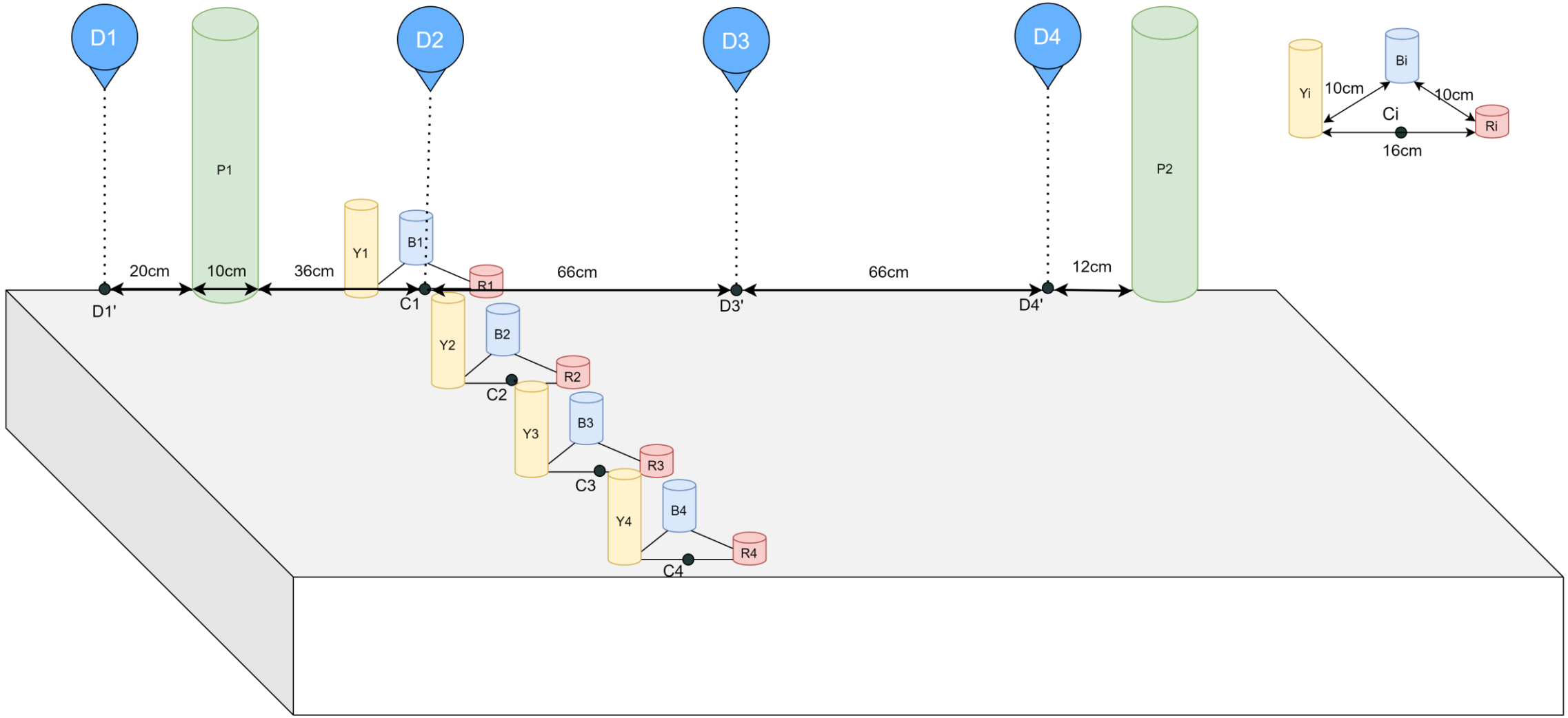
All in all, remember:

- Given an hour time bin:
  - Air temperature, air humidity, wind speed and solar radiations are cumulative and the average value is returned
  - Precipitation and irrigation are cumulative and the sum of the values is returned
  - Ground potential is a punctual measurement (i.e., it represents the soil moisture at a precise timestamp)

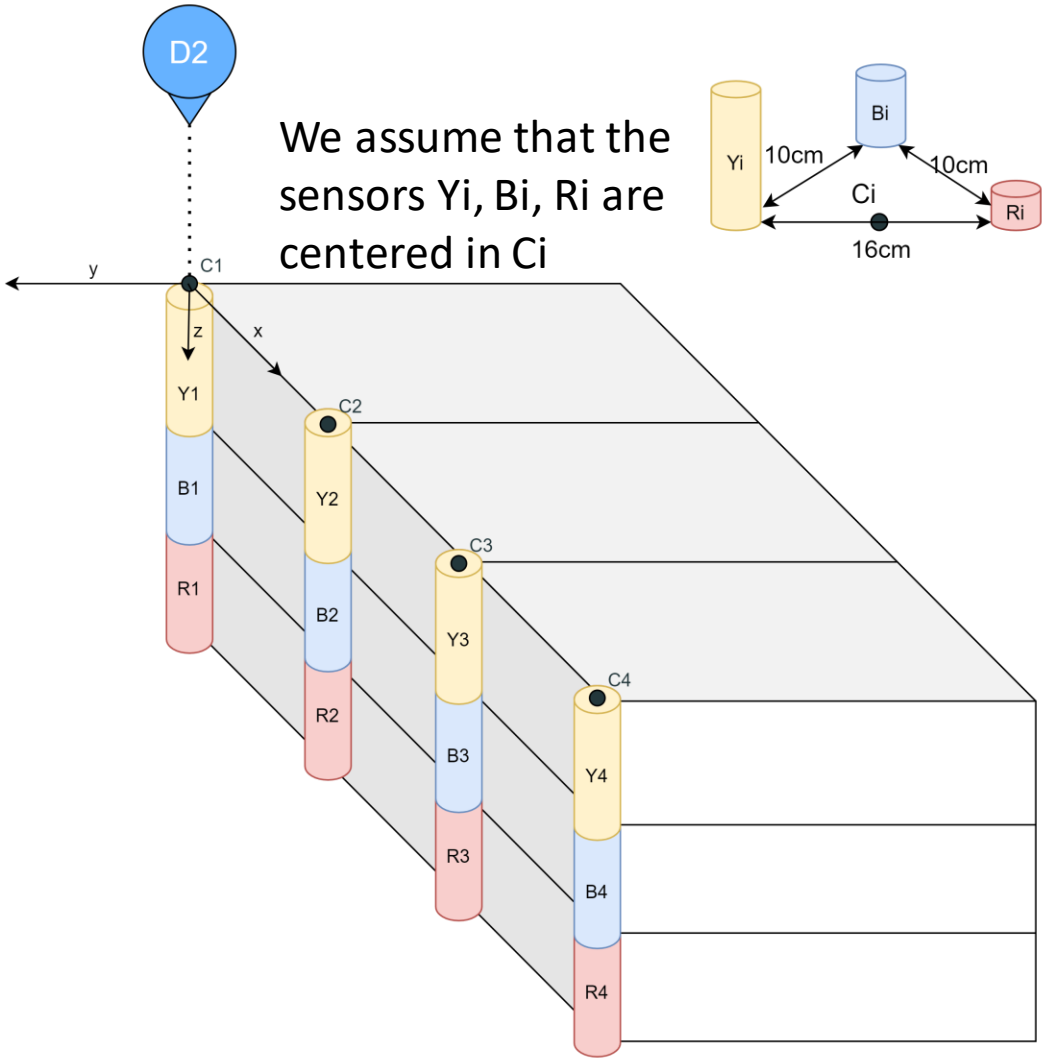
About the specific layouts

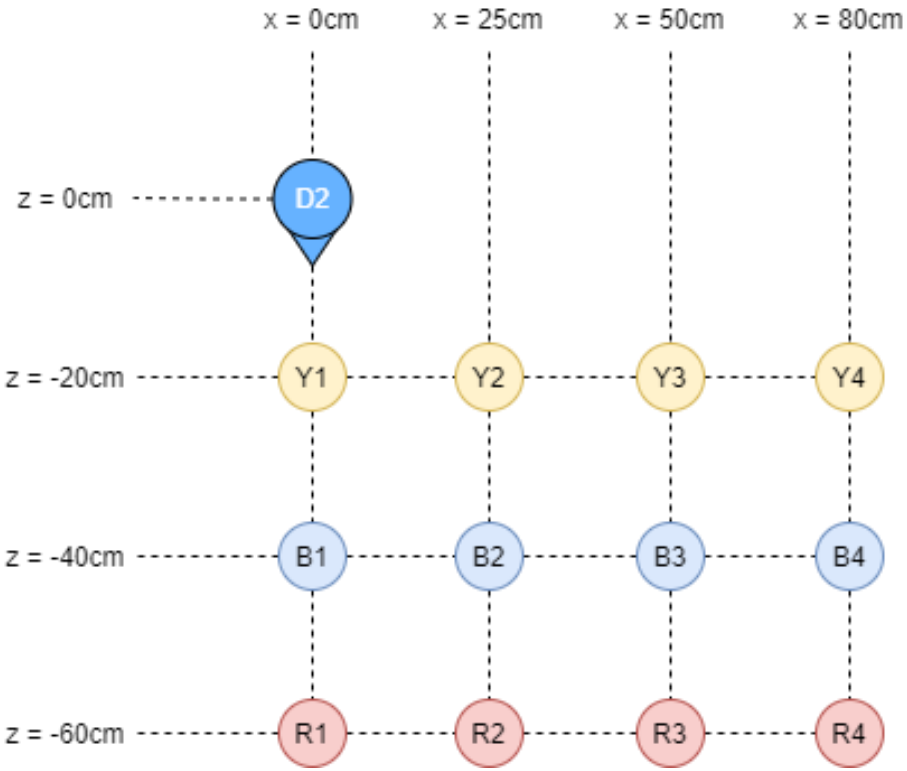


T1 basso


D1
D2
D3
D4
P1
P2
Y1
B1
R1
Y2
B2
R2
Y3
B3
R3
Y4
B4
R4
20cm
10cm
36cm
66cm
66cm
12cm
D1'
C1
D3'
D4'
C2
C3
C4
Yi
Bi
Ri
Ci
10cm
10cm
16cm

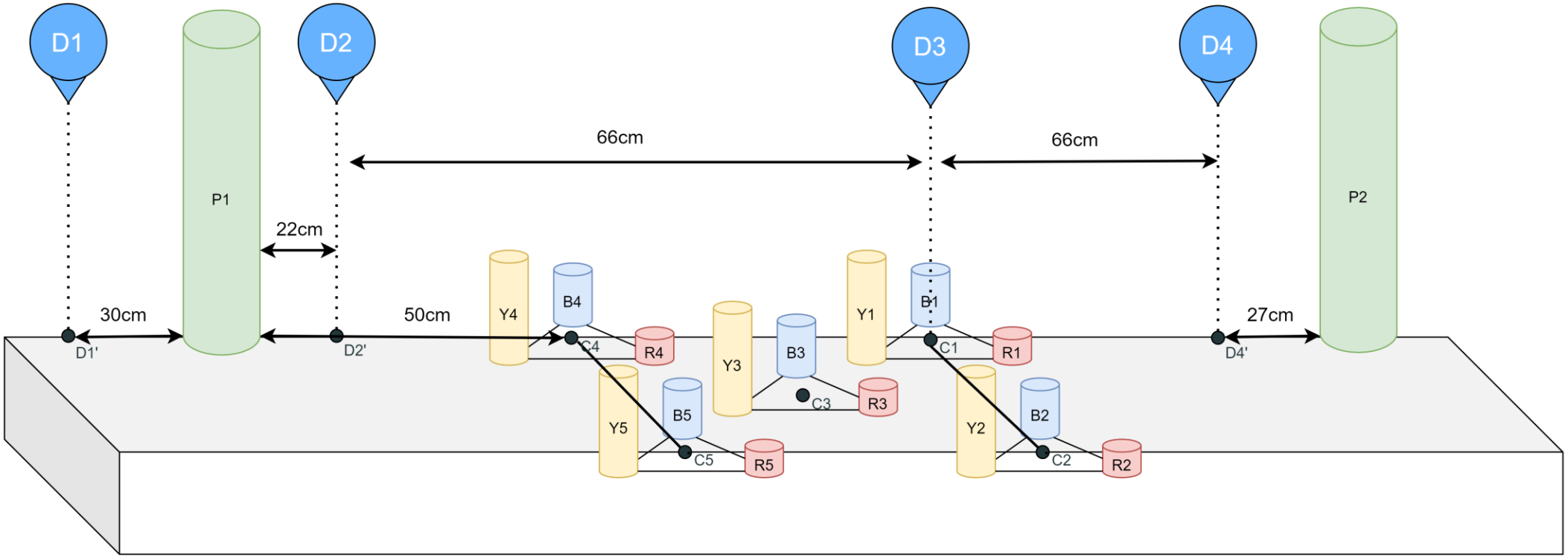
T1 basso

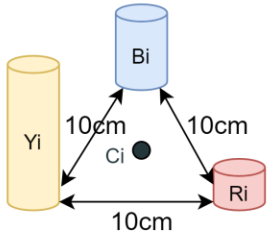

D2
We assume that the sensors Yi, Bi, Ri are centered in Ci
Yi
Bi
Ri
Ci
10cm
10cm
16cm
y
x
z
C1
C2
C3
C4
Y1
B1
R1
Y2
B2
R2
Y3
B3
R3
Y4
B4
R4


x = 0cm
x = 25cm
x = 50cm
x = 80cm
z = 0cm
z = -20cm
z = -40cm
z = -60cm
D2
Y1
Y2
Y3
Y4
B1
B2
B3
B4
R1
R2
R3
R4

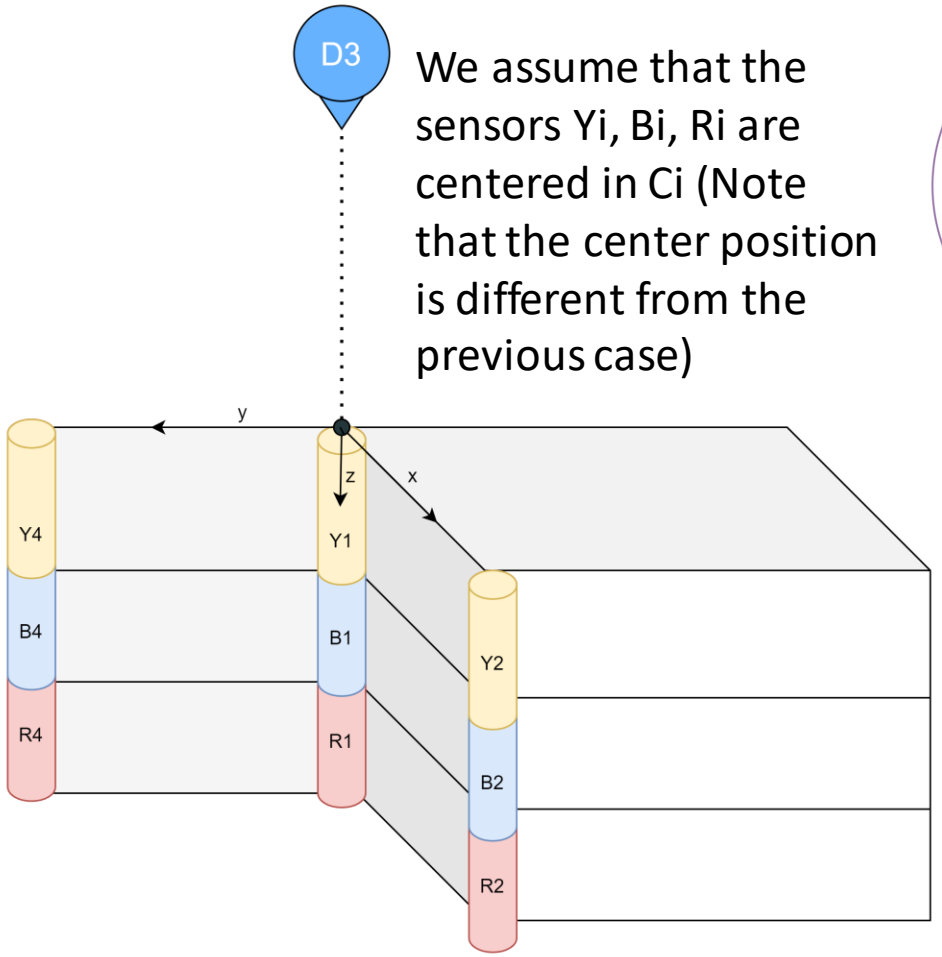
T1 basso

T1 alto

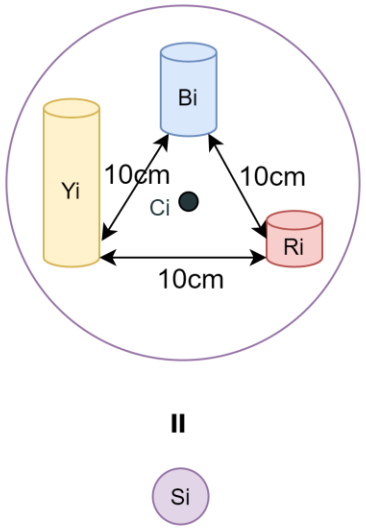

D1
D2
D3
D4
P1
P2
66cm
66cm
22cm
30cm
50cm
27cm
D1'
D2'
D4'
Y4
B4
C4
R4
Y3
B3
C3
R3
Y1
B1
C1
R1
Y5
B5
C5
R5
Y2
B2
C2
R2


Bi
Yi
10cm
10cm
Ci
Ri
10cm

T1 alto

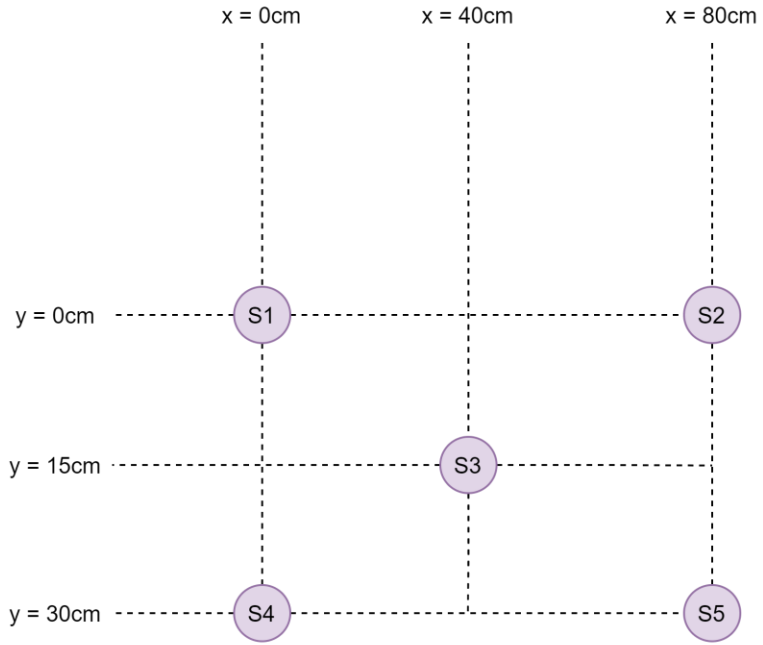


We assume that the sensors Yi, Bi, Ri are centered in Ci (Note that the center position is different from the previous case)

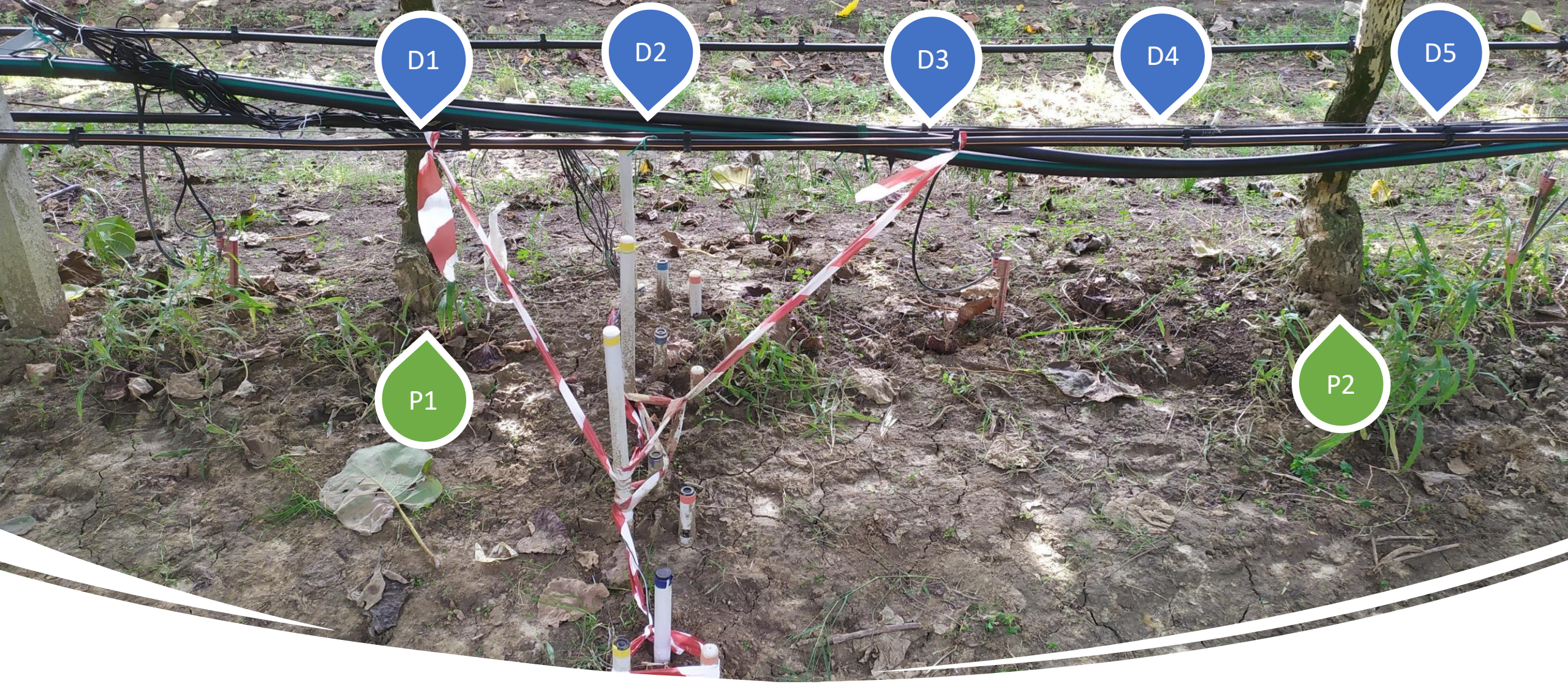


II

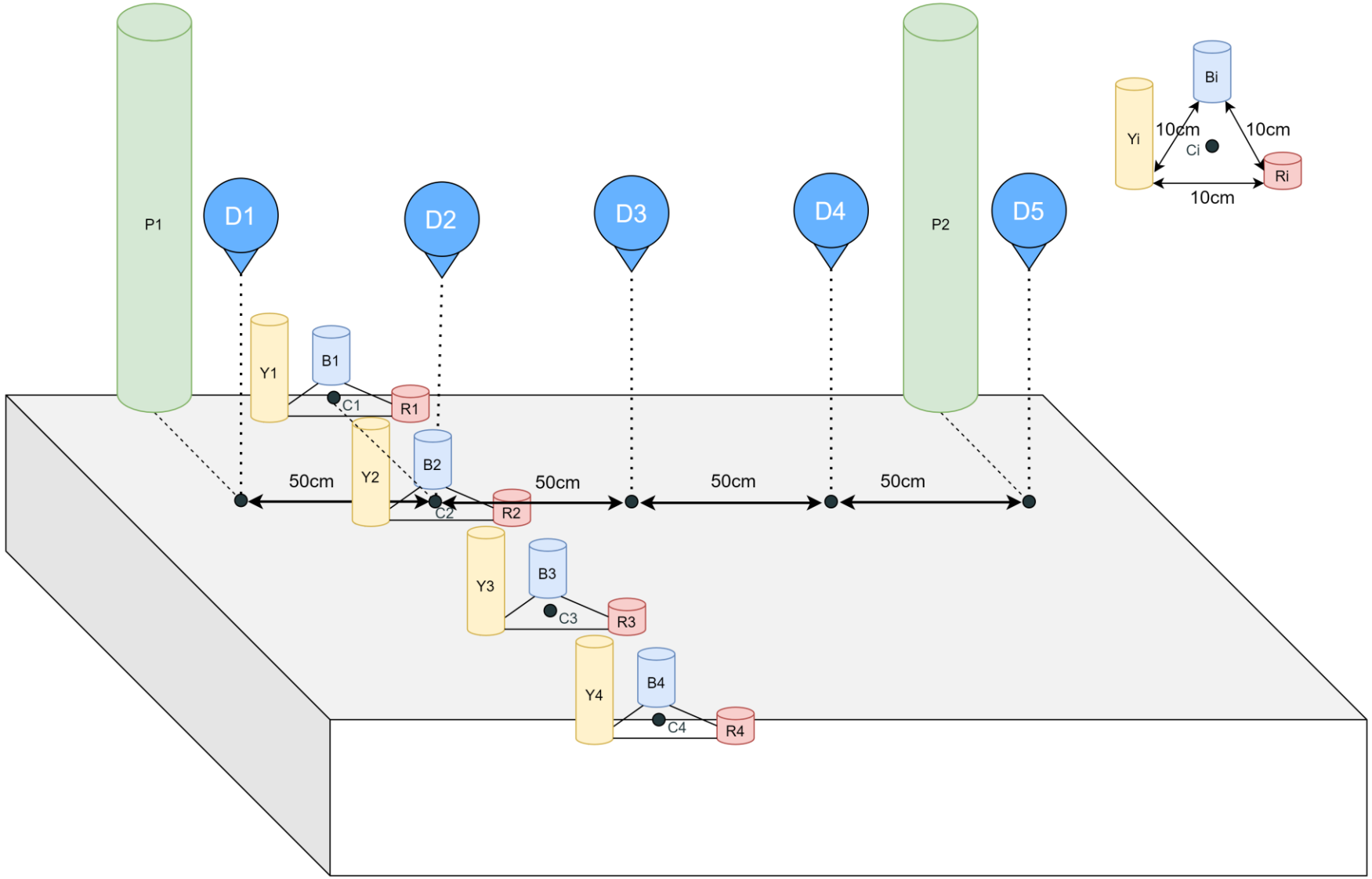
Si



T1 alto

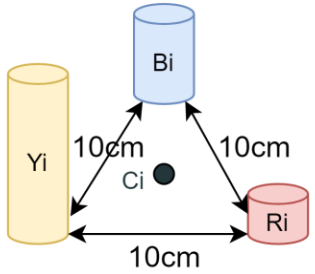


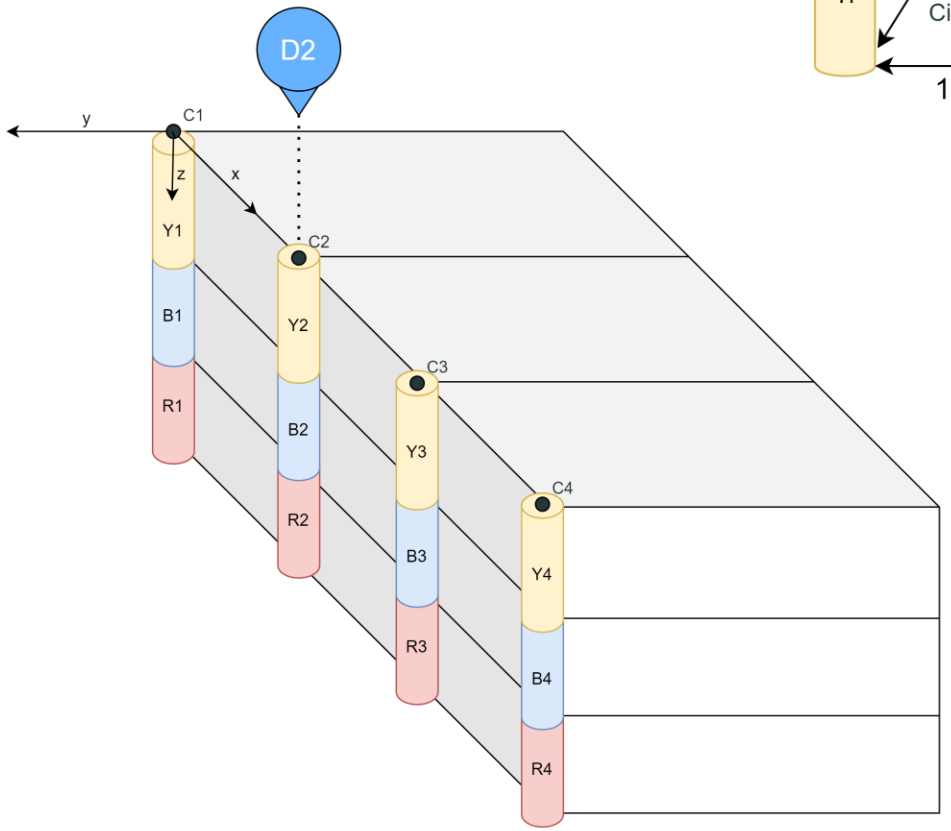
T2 basso

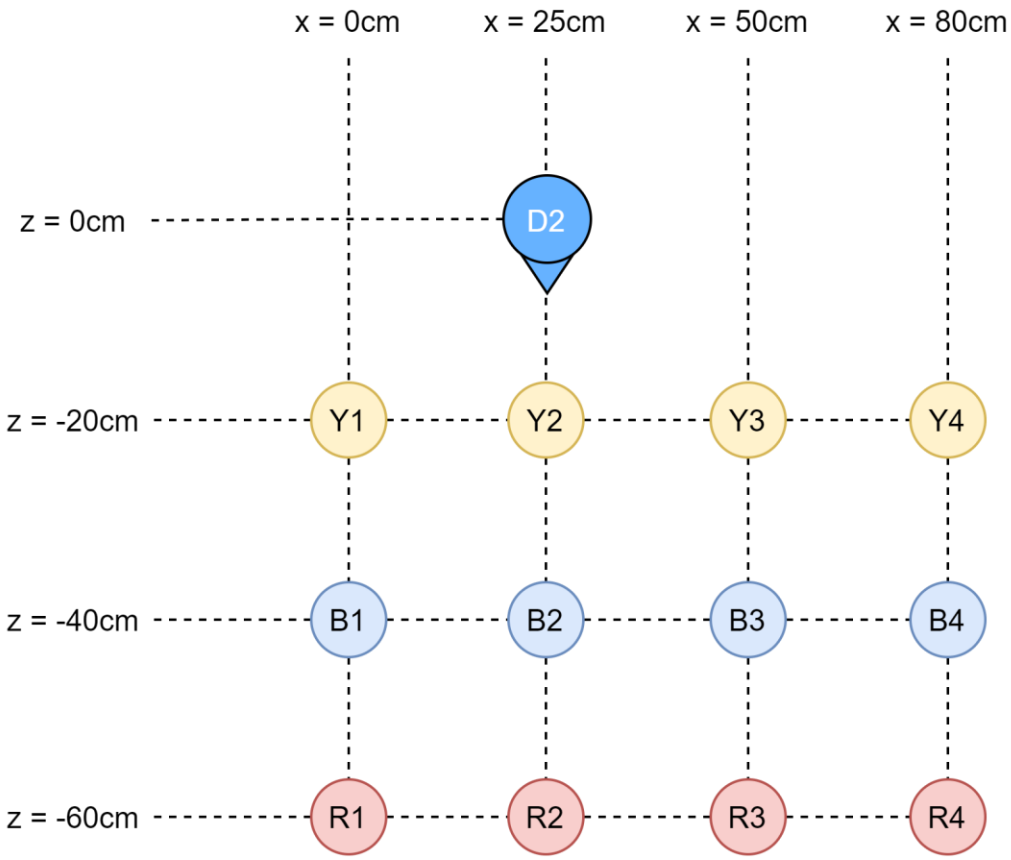

P1
D1
D2
D3
D4
P2
D5
Y1
B1
C1
R1
Y2
B2
C2
R2
Y3
B3
C3
R3
Y4
B4
C4
R4
50cm
50cm
50cm
50cm
Bi
Yi
Ci
Ri
10cm
10cm
10cm

T2 basso

We assume that the sensors Yi, Bi, Ri are centered in Ci

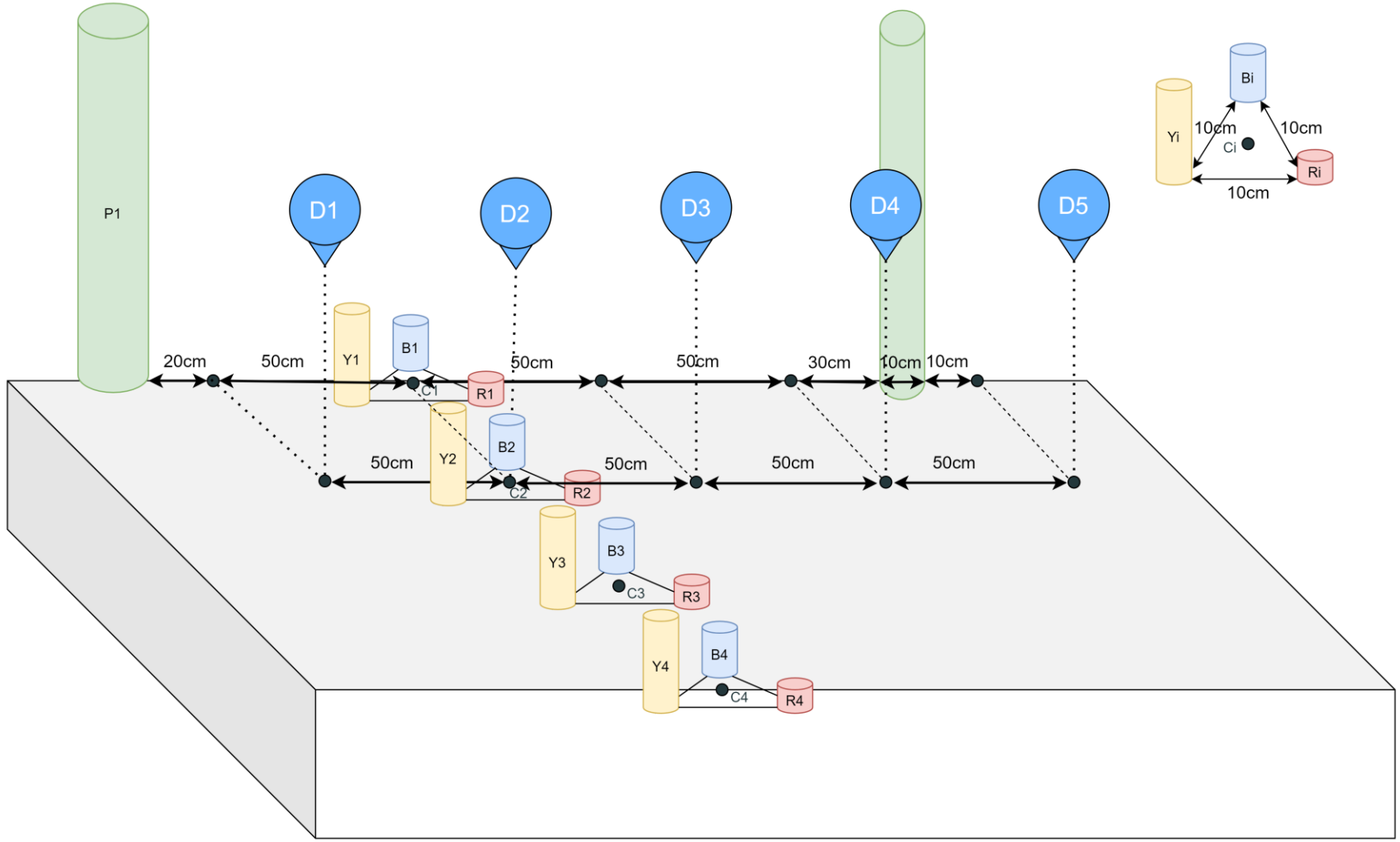






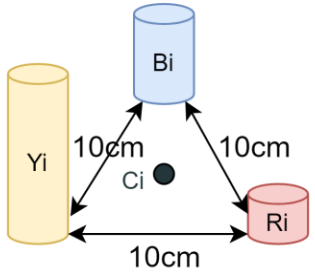
T2 basso

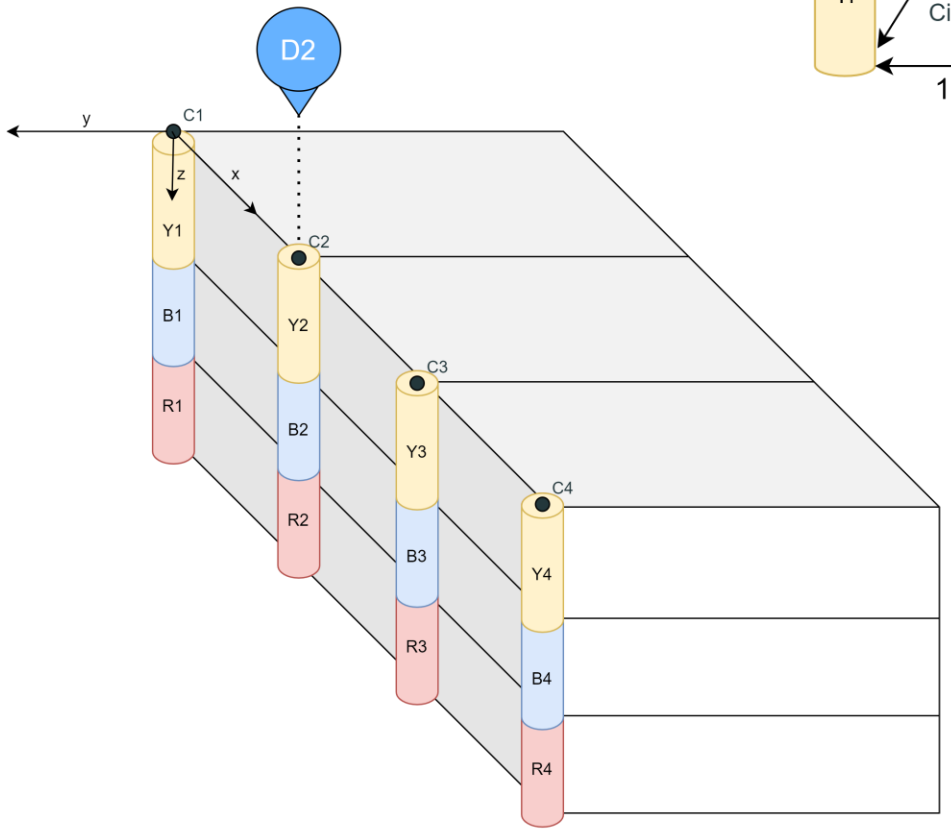
T2 alto

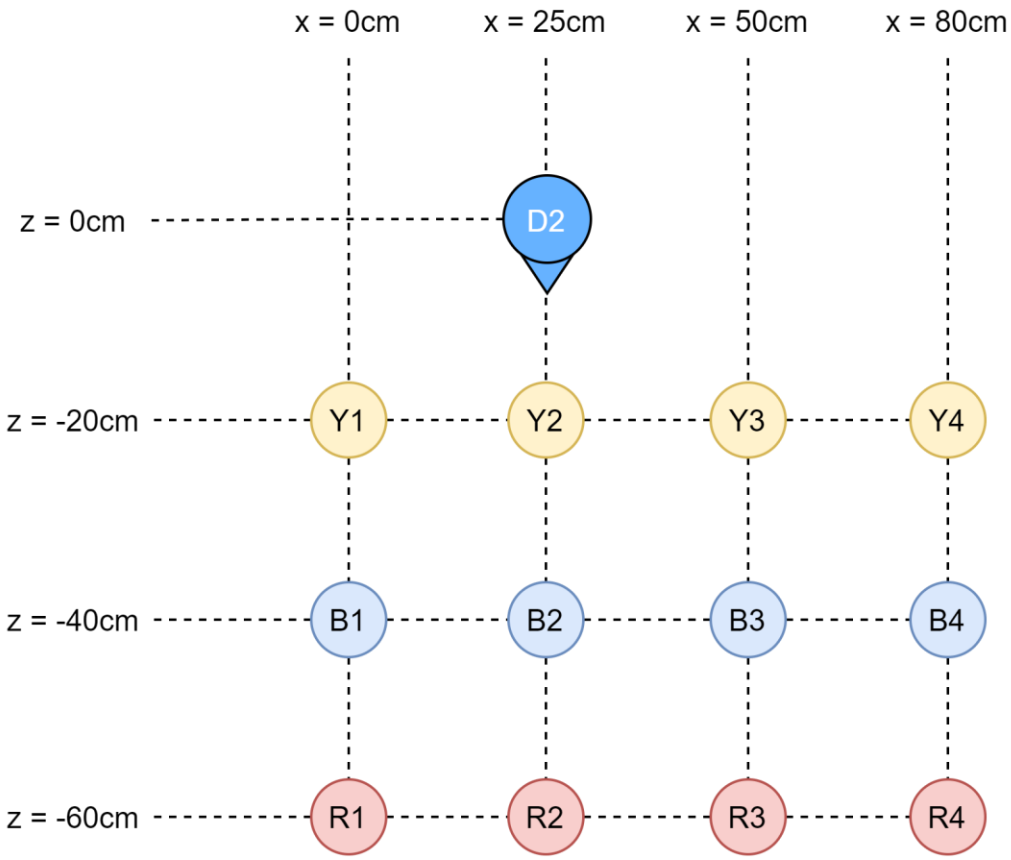

P1
D1
D2
D3
D4
D5
20cm
50cm
50cm
50cm
30cm
10cm
10cm
50cm
50cm
50cm
50cm
Y1
B1
C1
R1
Y2
B2
C2
R2
Y3
B3
C3
R3
Y4
B4
C4
R4
Yi
Bi
Ci
Ri
10cm
10cm
10cm

T2 alto

We assume that the sensors Yi, Bi, Ri are centered in Ci

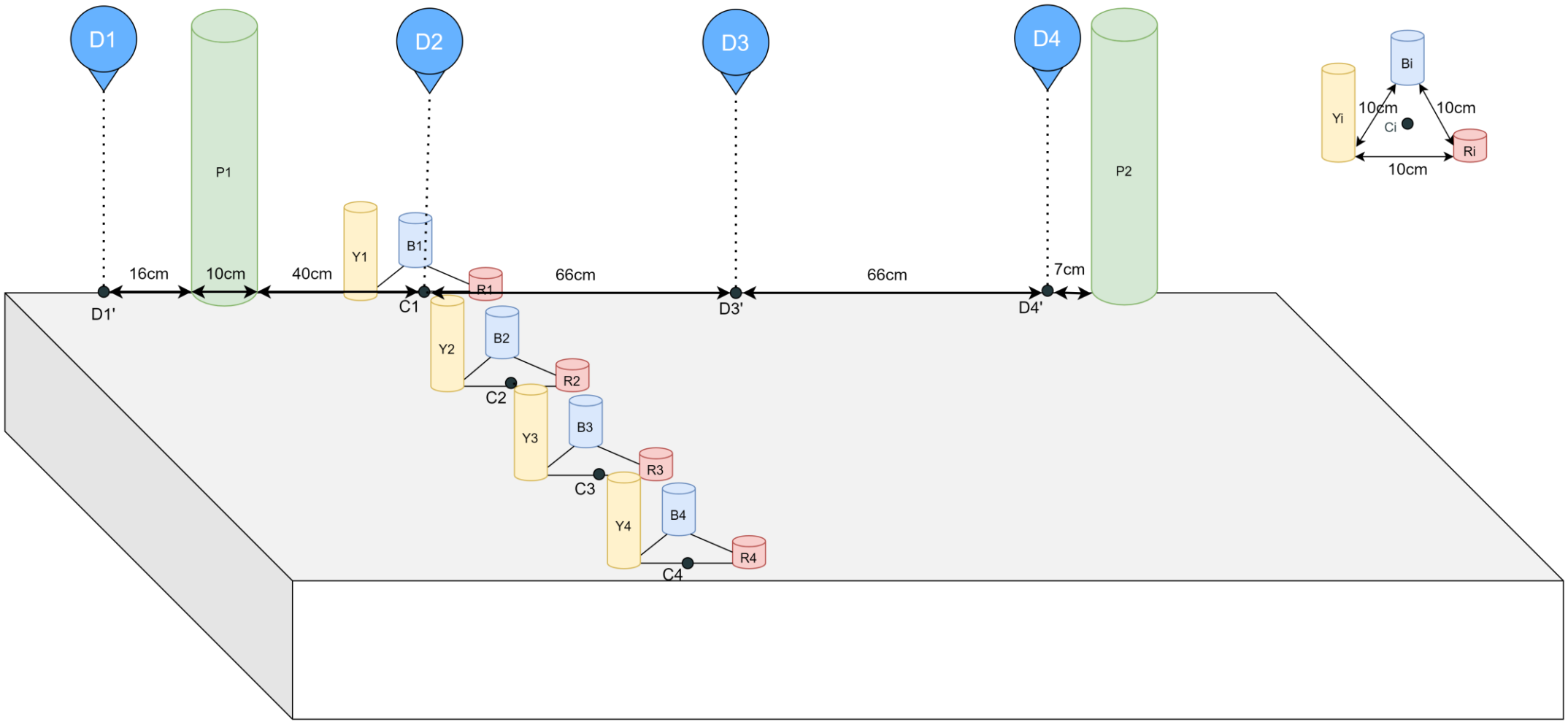




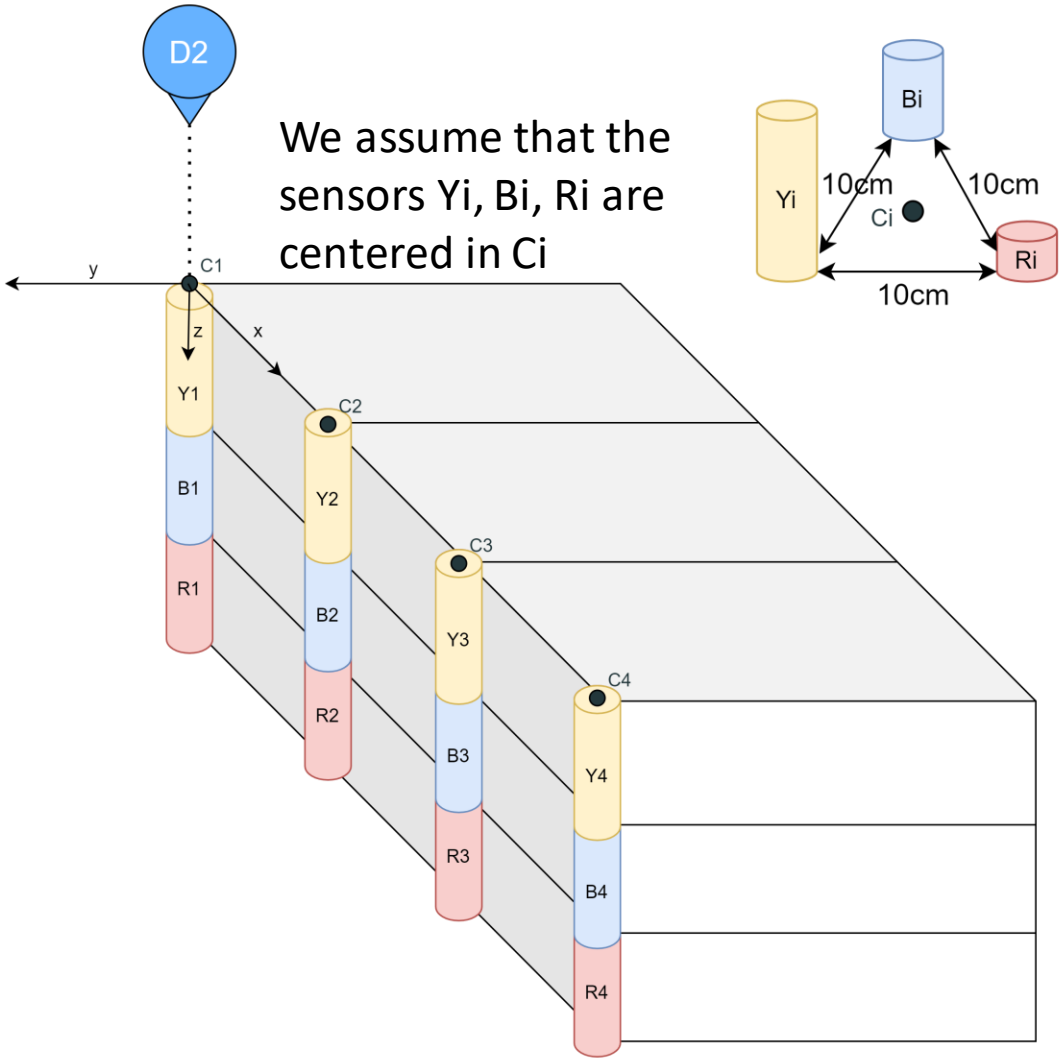


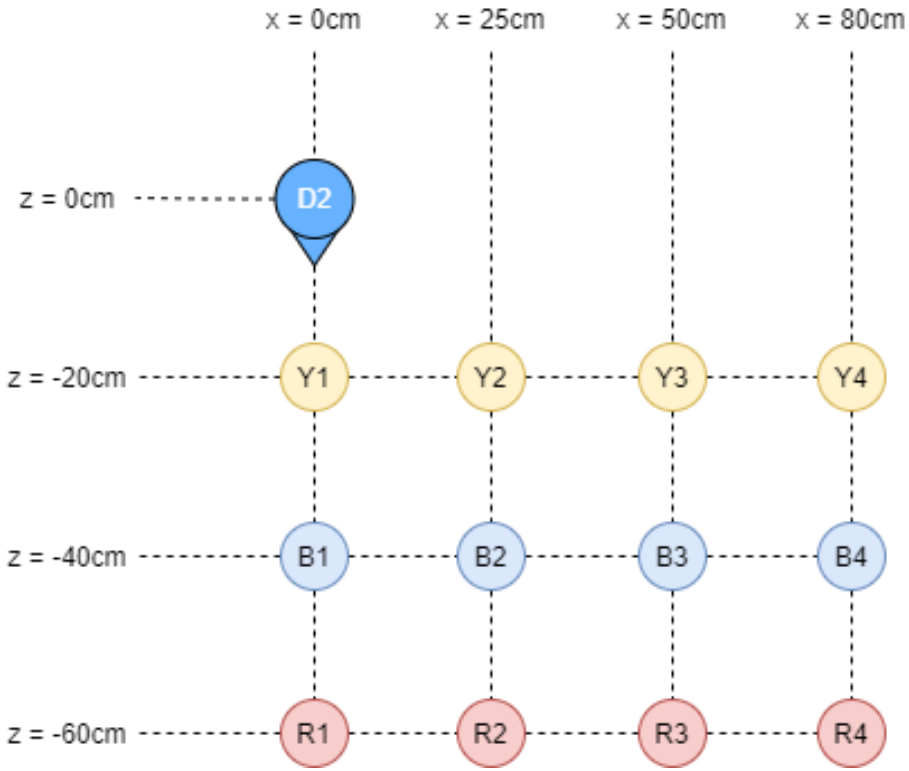
T2 alto

T0


D1
D2
D3
D4
P1
P2
16cm
10cm
40cm
66cm
66cm
7cm
D1'
C1
D3'
D4'
Y1
B1
R1
Y2
B2
R2
C2
Y3
B3
R3
C3
Y4
B4
R4
C4
Bi
Yi
Ci
Ri
10cm
10cm
10cm

T0


D2
We assume that the sensors Yi, Bi, Ri are centered in Ci
Bi
Yi
10cm
Ci
10cm
Ri
10cm
y
C1
z
x
Y1
B1
R1
C2
Y2
B2
R2
C3
Y3
B3
R3
C4
Y4
B4
R4


x = 0cm
x = 25cm
x = 50cm
x = 80cm
z = 0cm
D2
z = -20cm
Y1
Y2
Y3
Y4
z = -40cm
B1
B2
B3
B4
z = -60cm
R1
R2
R3
R4

T0