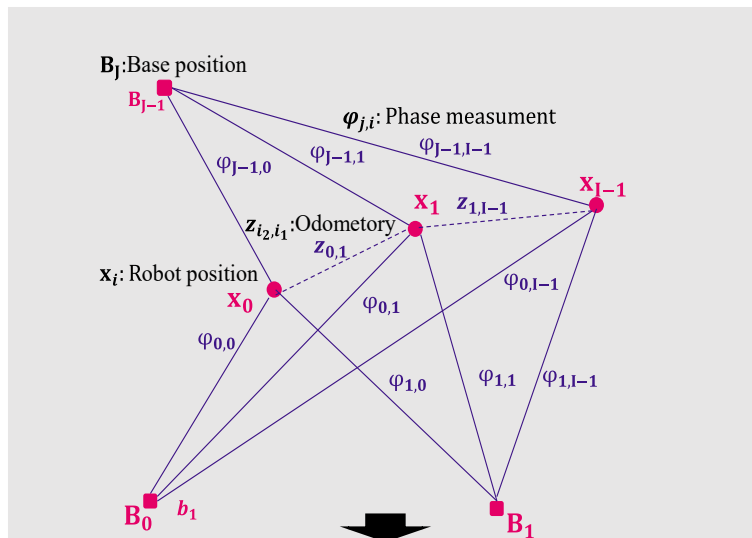
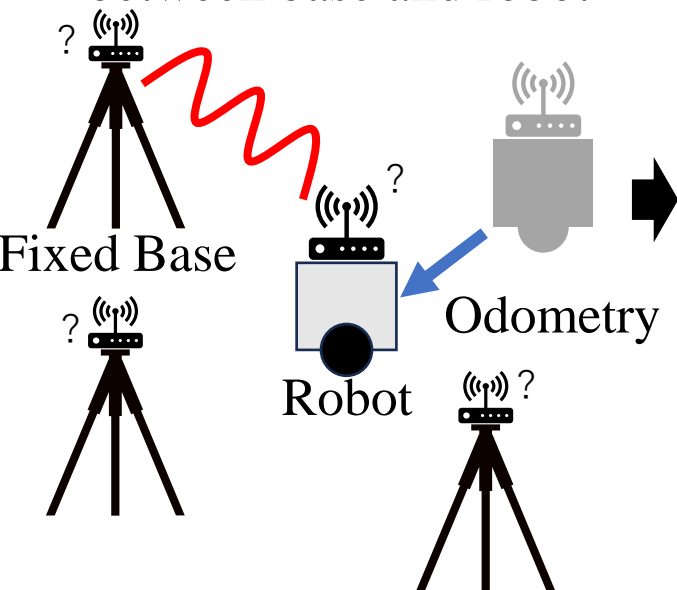


Carrier phase measurement between base and robot



$$\hat{X} = \underset{X}{\operatorname{argmin}} \sum_i \underbrace{\|e_{\text{OD}, i+n, i}\|_{\Omega_{\text{OD}, i+n, i}}}_{\text{Odometry error term}} + \sum_i \sum_j \underbrace{\|e_{\text{PH}, i+n, i, j}\|_{\Omega_{\text{PH}, i+n, i, j}}}_{\text{Carrier phase error term}}$$

- Two types of sensor data with different characteristics are integrated using graph optimization
- Simultaneously estimate the positions of the bases and the robot