1 Configuration of Amcl parameters

The results so far (see update document of 12_11) did show deviations in the pose, drifting by some value as soon as the end of a straight line has been reached. This is probably due to errors in the motion model, which needs to be compensated by tuning proper parameters. **Amcl** does infact strongly rely on **odometry** and **sample motion model**, hence if errors in the odometry occurs (the error in the odometry is always presence due to the noise), this will just accumulate.
The **Kinematic motion** model in use will be **odometry motion model**; there is also a velocity motion model, not in use by AMCL. The latter tend to be less accurate (for all details see book Probabilistic Robotics p. 96).

Table 1: AMCL parameters

alpha1	Specifies the expected noise in odometry's rotation estimate from the rotational component of the robot's motion, has an effect on Figure 1.b
alpha2	same as alpha1, but for the translational component
alpha3	Specifies the expected noise in odometry's translation estimate from the rotational component of the robot's motion, Figure 1.c
alpha4	same as alpha3, but for the translational component

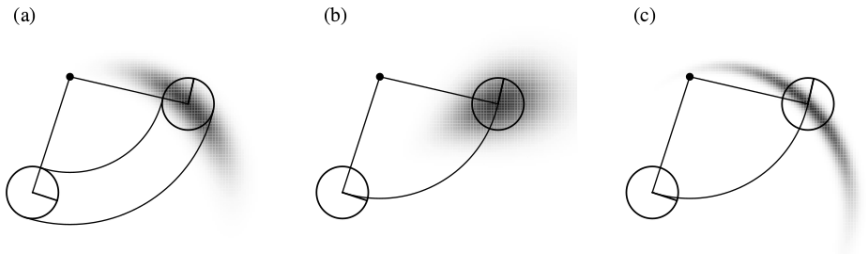

Figure 1: Velocity motion models for different noise parameters settings. Figure .b shows large translational error and small angular error, Figure .c large angular errors and small translational error
.

1.1 AMCL with GMapping map

This case presents a deviation (a translation) due to angular drift; therefore the first parameter that should be tuned is **alfa4**. The strategy is here to leave the alfa1,2,3 as default to **2** by only changing the alfa4.
The particles of the filter are fixed to **6000,9000**.

Table 2: alfa parameters and results

alfa4	**Results**
0.05	