

## 1 KartoSLAM tuning

The **range threshold** has been tuned, with constant particles (10,50), the final value was found to be 90. All other parameters are the same as GMapping.

**Note:** When finally comparing localization methods, the map has an influence. Here GMapping and Karto do not come with the same parameters, hence a binarized error comparison should be done, see paper ROS comparison. In this way we can justify the Localizers differences. All tentatives for tuning particles are seen under the folder **graph\_mappingdefault** in the *bagfiles*.

Table 1: Tuning particles for the Karto, keeping the range threshold to 90, as explained above

min=10, max=50	
min=900, max=1000	

**Results:** We can take as good the combination with 10 and 50 and make comments on the solver, according to question below. It is very surprising that an higher number of particles worsens the filter considerably

**Question:** Why more particles are needed to have an higher accuracy in the Mapping algorithm? The higher the particles, the better the accuracy should be (see paper Tuning ROS params for GMapping [1]). Where are those particles used in GMapping and where in KartoSLAM. **Needed to go in the filter code and see how are particles used, which technique like Scan Matching, SPA solver provides the way to reduce the number of particles for Mapping**

## 2 References

[1]: A Quantitative Study of Tuning ROS Gmapping Parameters and Their Effect on Performing Indoor 2D SLAM