??

??

sim-
ple_room
4m×
4m×
1.5m
??
room.png
$_arena.jpg$P.A.N.D.O.R.A.

R_{ideal}
R_{sim}
R_{real}
??
$\delta_f - \delta_r$ R_{ideal} R_{sim} R_{real}
0.4 0.378 0.377 0.396
0.32 0.483 0.519 0.524
0.24 0.654 0.722 0.689
0.16 0.991 1.023 1.087
$_steering_experiment.png$
$_steering_experiment_real.png$
δ_f
δ_r
$\delta_f =$
δ_r
β_{ideal}
β_{sim}
β_{real}
??

$\delta_f,\ \delta_r$ β_{ideal} β_{sim} β_{real}
0.4 0.4 0.398 0.427
0.32 0.32 0.336 0.358
0.24 0.24 0.320 0.246
0.16 0.16 0.151 0.139
$_steering_experiment.png$
$_steering_experiment_real.png$
??

4m
0.04m
robocup
0.03
0.02
??
$_robocup_ground_truth.png[CRSM-$
$SLAM][width = 0.31 height = 5cm] Chapters/Chapter5/Figures/std r_robocup_crsm.png[Gmapping][width = 0.31 height$

??

??

??
$_ramp.png[-$
$.][width = 0.32 height = 3.5cm] Chapters/Chapter5/Figures/stepfield.png, Monster truck.$

15°
??

??
$_crsm_map.png$ $[Gmapping.][height = 5cm] Chapters/Chapter5/Figures/csal_gmapping_map.png,,.$
$_2013_arena_flat.png$
$_arena_flat_crsm_map.png$
$_arena_flat_gmapping_map.png RoboCupRescue 2013.$
$_2013_arena.png$
$_arena_crsm_map.png$
$_arena_gmapping_map.png RoboCupRescue 2013.$