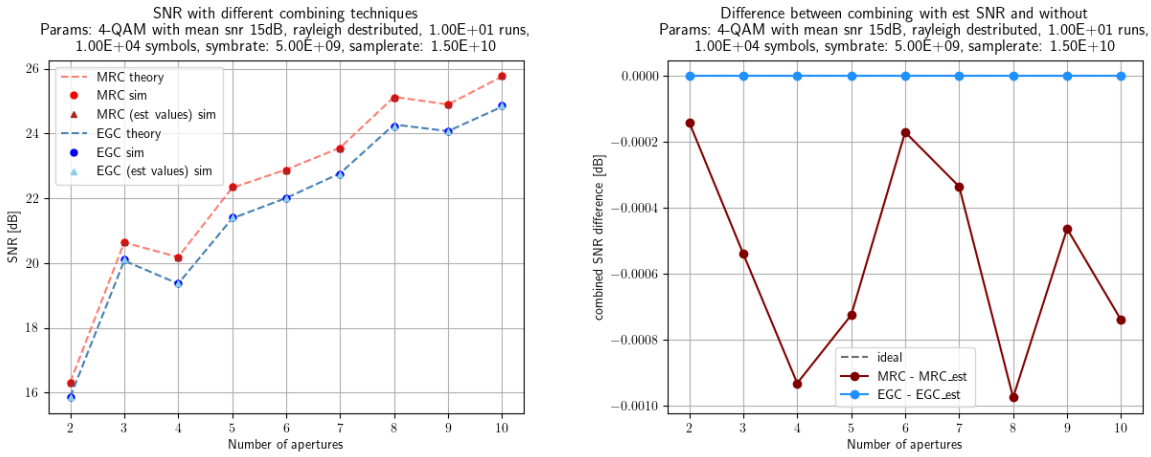
1 Channel knowledge

Within the first simulations on the topic of combining in the SIMO system it was assumed that here for the MRC combining ideal channel coefficients ($\rightarrow$ in this case the set SNR) per single channel are known. This corresponds to an initial assumption and cannot be assumed in the real system for several reasons. Therefore, it shall be investigated to what extent estimated instead of ideal values have an influence within the combining. For this, the known spectrum SNR method should be used. The investigation of the behavior of the spectrum SNR method can be found in a different pdf file related to the project.

1.1 Simulations

The simulations will be used to investigate the performance of combining under more realistic conditions than ideal channel knowledge. The expectation here is that EGC is not affected by this situation, since no channel coefficients are included in this procedure. For a first check EGC is nevertheless shown in the plot. Also expected are deviations in the MRC procedure.



(a) (b)

Figure 1: (a) baseline measurement compared to theory (b) difference between ideal and estimated SNR for combing

As someone can see in figure 1, the EGC signal behaves like expected. The corresponding simulation meets the expectations discussed before. With a maximum difference of 0.001dB between the combined MRC signal with ideal channel knowledge and estimated channel knowledge with spectrum SNR method, there is no real difference in this both values.