

Compressive Sensing 1920WS HW

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1 Simulation

Parameter values used in the simulations are listed in 1. The kernel components are selected randomly from the normal distribution with the carrier frequency f_C as its mean.

Parameter	Value
Measurement size N	220
Sparsity K	2
Rows in kernel M	50
Sampling frequency f_S	100 Hz
Carrier frequency f_C	20 Hz
Gabor pulse bandwidth B	0.01 (Hz)^{-2}

Table 1: Parameter values

2 Simulation results

The obtained results are shown in figure 1, which are obtained from two different data sets, i.e. with the different kernel components.

With $M = 50$ the stable reconstruction quality can be obtained via OMP. On the contrary, the quality of the MP reconstruction depends more on the selection of the frequency components of the kernel, indicating that it requires more kernel components for a stable reconstruction.

Moreover, as figure 1e and 1f demonstrate, MP needs more iteration until it converges. This is because the same elements in the estimate tend to be updated for several times, making it inefficient.

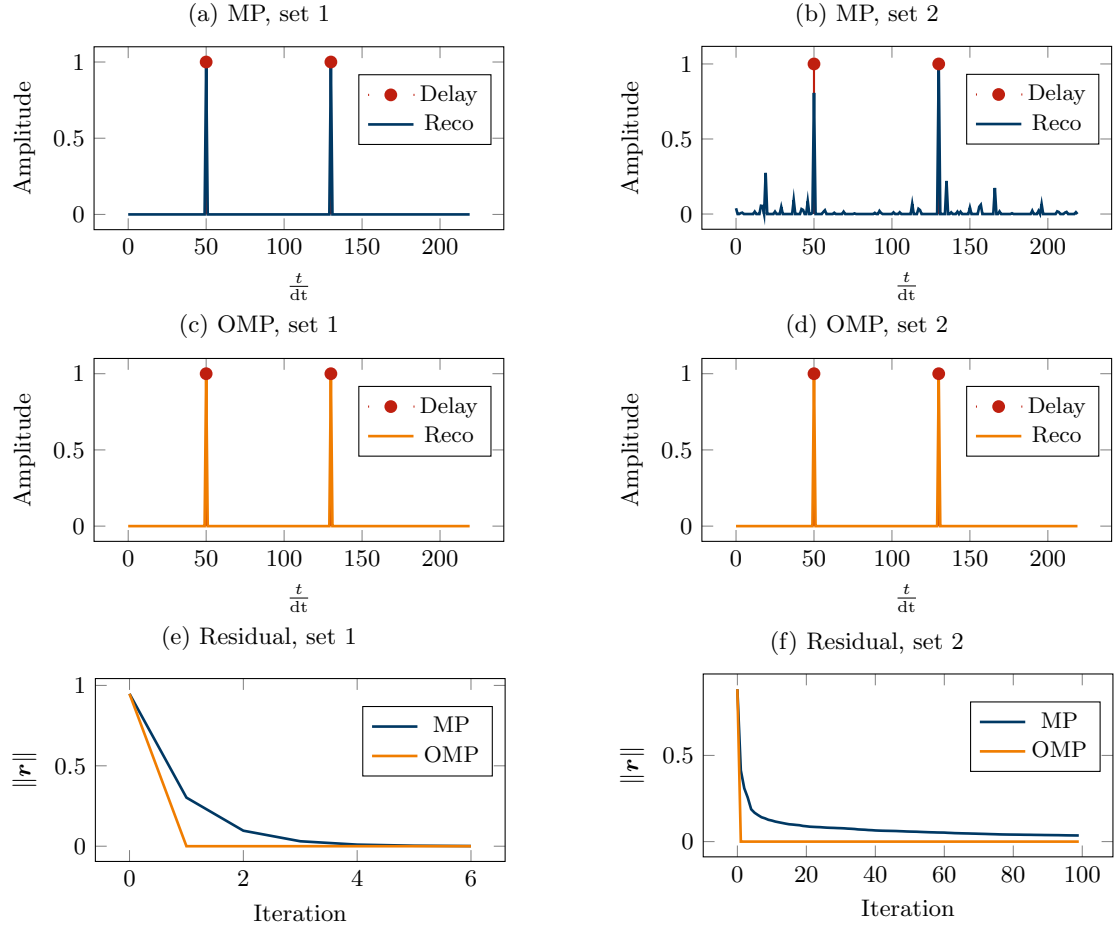


Figure 1: Actual time shift and the reconstruction via MP and OMP: results are obtained from two different data sets. Figure 1a to 1d show the reconstruction results, whereas figure 1e and 1f illustrate the total norm of the residual at each iteration.