# Multichannel Sampling of Pulse Streams at the Rate of Innovation -M atlab Package Instructions

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The following matlab package contains two main functions:

## Sampling function

c=MultiSampMix(tl,al,S,T)  
The following function perform sampling of Diracs with unknown delays and amplitude, using modulation based multichannel scheme. The samples obtained are noiseless. In order to simulate noisy scenario, add noise to the samples.

Inputs:  
tl - row vectors of delays.  
al - row vectors of amplitudes.  
S - mixing matrix.  
T – Integration time.

Output:  
c – row vector of samples.

## Reconstruction function

tl=MultiRecoverMix(c,S,T,L)  
The following function perform recovery of the Diracs delays from the samples. Noise can be added to the samples prior to the reconstruction stage.

Inputs:  
c – row vector of samples.  
S - mixing matrix.  
T – Integration time.  
L – number of pulses.

Output:  
tl – estimated delays.

In addition there are two functions demonstrating the usage of these functions and perform comparison to other FRI techniques:

1. MultiFri\_vs\_splines.m - perform comparison to the E-spline and B-spline based methods.
2. MultiFri\_vs\_int\_and\_exp.m - perform comparison to the integrators and exponential filters based methods.