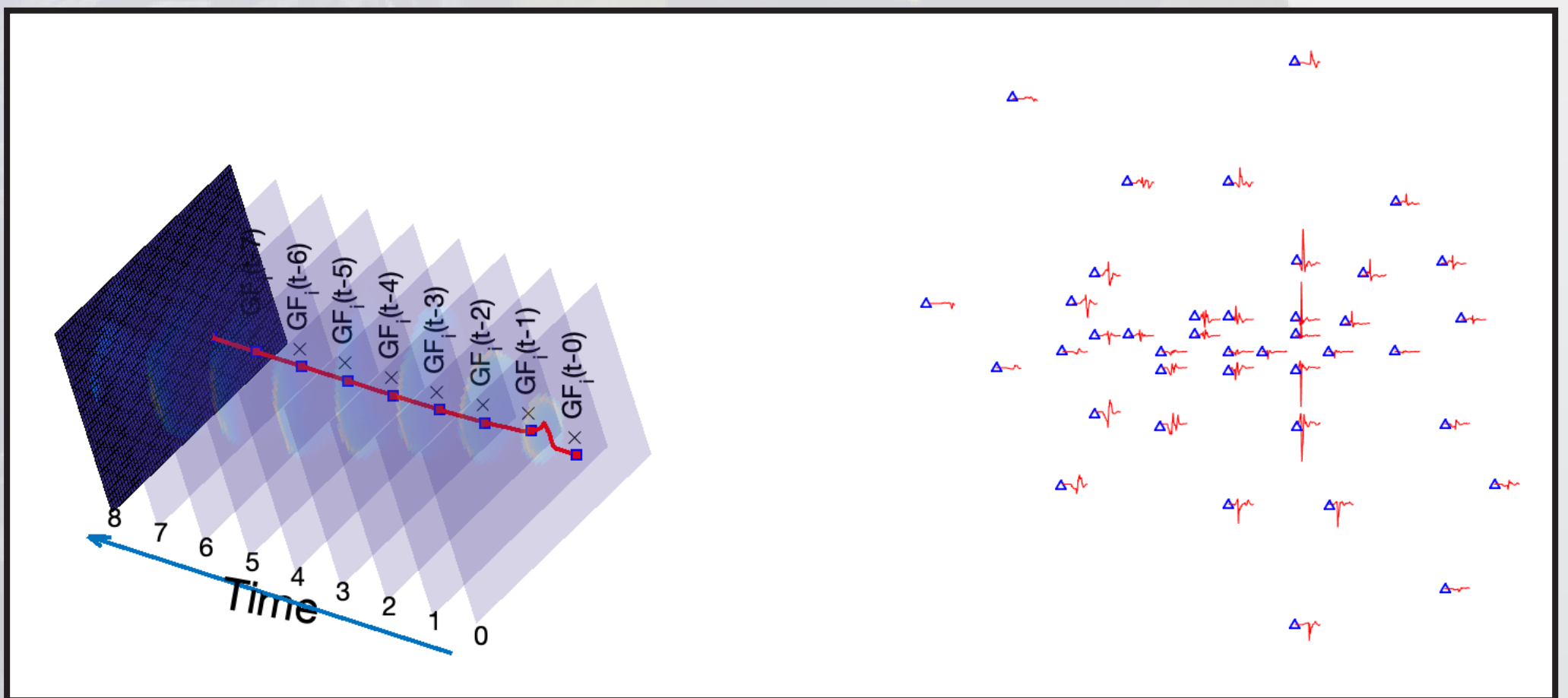


# SOLID EARTH SEMINARS

## Kinematic finite-fault source inversion: a neuro-fuzzy approach



### WHAT'S THIS ABOUT?

Finite fault inversions are aimed to resolve the earthquake source process. The source process is explained with the source function which is a function of time and space. Finite fault inversion tries to find the source function using the observed displacements on the Earth surface. The current methods of finite-fault inversions involve a high number of parameters to resolve, which, compared with a few number of observations from an earthquake on the Earth surface, gives an under-determined problem. In order to decrease the number of parameters, we used fuzzy systems to approximate the source function. Fuzzy systems are function approximators that detect the function behavior with a few number of patches. These patches work as a complete set of base functions that can approximate every function with smooth base functions. The combination of fuzzy systems with neural networks makes an ANFIS network (Jang 1993) which is a standard tool to implement fuzzy systems to a set of data. In this work, we developed a finite fault inversion method employing the approximation power of ANFIS to decrease the number of parameters of finite-fault inversion in a regularized fashion. The method has been tested on the SIV1 benchmark problem (Mai et al., 2016) for finite fault inversions.

**NAVID  
KHEIRDAST**

**📍 IDL'S MEETING ROOM  
APRIL 29  
MONDAY - 1H PM**