

1164-65-80

**Thi Phong Nguyen\*** (nguye686@purdue.edu), 150 N. University St., West Lafayette, IN 47907,  
and **Bojan Guzina**. *Identifying fractures in finite body from surface seismic measurements.*

In this talk, we will discuss the so-called linear sampling method (LSM) and the generalized linear sampling method (GLSM) to reconstruct a partially closed crack in finite body. For the mathematical model, we consider a bounded domain (in  $R^2$ ) containing cracks, illuminate the cracks by surface traction acting on the boundary, and measure scattered waves (data) on the boundary. In this model, the “hidden” fractures are described by the linear model of slip of Schoenberg (relation between the jump of seismic field through the crack and the tension of contact). We further assume that elastic waves (both illumination and sensory data collection) are supported by the Robin boundary condition on one partial boundary and the Neuman condition on the remainder. The principle of the above sampling methods is to construct indicator functions, based on the given seismic data, to identify whether or not a given test curve belongs to the crack. Some related numerical results will be presented at the end. (Received January 13, 2021)