AIMS² Research Project in Analysis of Strong Ground Motions and its Application to Earthquake Early-Warning Systems

Research Duration:	2020-21 (September 15, 2020 – May 31, 2021)
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Title of Project:	Analysis of Strong Ground Motions and its Application to Earthquake Early-Warning Systems

Project Description

The real-time earthquake early warning system uses earthquake science and technology to detect significant earthquakes quickly so that alerts can reach many people before shaking arrives. With warning times of up to tens of seconds it is possible to mitigate the damage, but only if the seismic source parameters are determined rapidly and accurately. In this project we investigate recorded strong-motion accelerograms in California to demonstrate conventional methods of time-series analyses and calculate the wave arrival time.

Goals and Objectives of the Project

- Describe fundamental engineering seismology,
- Research earthquake early-warning systems, and
- Use approaches to analyze strong ground accelerograms.

Expectations from Students

- Meet virtually ~1 hour and work 4 to 6 hours per week (meeting schedule, TBA).
- Present their work in the AIMS² Research Symposium (March 2021, TBA),
- Have strong fundamental engineering background, such as Statics and Mathematics,
- Have computer aided graphic and computational skills, such as Excel and Matlab, and
- Be willing to learn while learning and think deeply about this project.

Project Outcomes

Through this project students will:

- Apply research skills such as an ability to find and review technical articles to get needed information,
- Use engineering problem-solving steps, and
- Develop their oral and written communication skills (i.e., create a poster, prepare Power Point slides, present orally).

Resources

A Canvas web page will be set up for this project. Open educational resources will be listed on the Canvas site.