



institute
of mine
seismology

&



UNSW
SYDNEY

Mine Seismology Workshop



**19-21 July 2021, University of New South Wales,
School of Minerals and Energy Resources Engineering
(with online streaming)**

Monday 19 July	09h00 – 16h00	Primer Course on the Basics of Mine Seismology
Tuesday 20 July	09h00 – 17h00	Presentations on Implementation and Applications of Seismic Monitoring in Mines
Wednesday 21 July	09h00 – 17h00	Presentations on Mine Seismology and Training in IMS Software

The registration fee is AUD 150 / day (incl. tea / coffee) for in-person attendance and AUD 75 / day for online attendance.

Presenters have 100% discount for the day of presentation.

Students and lecturers of UNSW attend for free, but require registration. Students of other universities have 50% discount provided proof of student registration is sent to IMS.

For more information and registration please visit IMS web site. Note that the number of in-person attendees is limited due to social distance rule in NSW.

Monday 19 July – Day 1, Room G51 in the Old Main Building at UNSW**Primer Course on the Basics of Mine Seismology**

The objective of the course is to explain the elementary principles of seismology and seismic monitoring in mines to non-seismologists: objectives of seismic monitoring in mines, seismic waves and seismic sources, seismic monitoring systems, location of seismic events, basic and derivative source parameters, source mechanisms, classification of seismic events, parameters of seismicity, analysis and interpretation of seismicity.

Tuesday 20 July – Day 2, Room G51 in the Old Main Building at UNSW**Presentations on Implementation and Applications of Seismic Monitoring in Mines**

The workshop is aimed at promoting discussion on best practices for seismic monitoring in mines. These will cover various topics of mine seismology and seismic monitoring: mechanisms of seismic events and mechanics of rockburst damage, processing of seismic monitoring data, audit of assumptions adopted in mine design and planning (e.g. parameters of *in situ* stress field), re-entry protocols after blasts and large seismic events, assessment of seismic hazard and rockburst hazard.

Geotechnical practitioners are invited to share their experience with seismic monitoring at particular mines.

If you would like to present please send an e-mail to: Dmitriy.Malovichko@IMSeismology.org.

Wednesday 21 July – Day 3, Room G51 in the Old Main Building at UNSW**Presentations on Mine Seismology and Training in IMS Software**

There will be a combination of theoretical presentations and practical exercises explaining and illustrating the processing and interpretation of seismic monitoring data.

What Can Go Wrong in Seismic Monitoring, Dr Dmitriy Malovichko

- Problems with settings of seismic sites (coordinates, orientation, response) and their effect to data analysis.
- Issues with data acquisition and processing settings (array configuration, synchronization, velocity model, classification of events, source calculation parameters) and their effect on data analysis.
- How to detect problems in a catalogue of seismic events.

Monitoring Seismicity with IMS Ticker3D, Gys Basson

- Live Viewer:
 - System health and management.

- Viewing/managing seismic data.
- STAT (reentry) tools.
- TARP automated tool for control room users.
- Long Term Analysis:
 - Viewing/managing long term seismic data.
 - Production data management, basic reports.
 - Sensitivity analysis.
 - Seismic Plots.

Utility of Seismic Source Mechanisms, *Dr Dmitriy Malovichko*

- Mechanisms of seismic sources: slip on a structure, pillar burst and abutment failure, rock fall, blast.
- Forensic analysis of large and damaging seismic events: understanding the source and damage.
- Source mechanisms and stress field: inversion of the orientation of principal stresses and calibration of numerical models.
- Evaluation of source mechanisms in IMS Trace: methods, constraints and issues (orientation and response of sensors).

Interpretation and Analysis of Seismicity in IMS Vantage, *Dr Dmitriy Malovichko*

- Visualisation and filtering of seismicity.
- Plots: time histories and correlation of seismic parameters, analysis of source mechanisms (stereonet, source-type).
- Evaluation of seismic and ground motion hazard.

Modelling tools in IMS software, *Gys Basson*

- Viewing stress modelling results for different mining layouts.
- Integrating stress modelling results with seismic data.
- Modelling results in seismic reports.