Mine Seismology Workshop

4-8 May 2020, University of New South Wales, Faculty of Engineering

Monday 4 May 09h00 – 16h00 Primer Course on the Basics of Mine Seismology
Tuesday 5 May 09h00 – 17h00 Presentations on Mine Seismology
19h00 Dinner hosted by Institute of Mine Seismology
Wednesday 6 May 09h00 – 17h00 Presentations on Mine Seismology / Seismological Courses
Thursday 7 May 09h00 – 17h00 Seismological Courses and Training in IMS software
Friday 8 May 09h00 – 17h00 Seismological Courses and Training in IMS software

The registration fee is AUD 150 / day incl. tea / coffee.
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.
**Monday 4 May – 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.

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**Tuesday 5 May & Wednesday 6 May – Days 2 & 3, Room G51 in the Old Main Building at UNSW**

**Presentations on Mine Seismology**

The workshop is aimed to promote presentation and discussion of recent developments on the topics of mine seismology: mechanisms of seismic events and mechanics of rockburst damage, processing of seismic monitoring data, rock mass characterisation using active and passive seismic data, assessment of seismic and rockburst hazards. A special session is planned which will be dedicated to the presentations of geotechnical practitioners, who will share their experience with seismic monitoring at particular mines.

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

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**Thursday 7 May & Friday 8 May – Days 4 & 5, Room G51 in the Old Main Building at UNSW**

**Seismological Courses 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, synchronisation, velocity model, classification of events, source calculation parameters) and their effect to data analysis.

- How to detect problems in the catalogue of seismic events.

**Monitoring Seismicity with IMS Ticker3D, Gys Basson**

- Live Viewer:
  - System health and management.
  - Viewing/managing seismic data.
– STAT (re-entry) 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, sudden bulking of stress-fractured ground, rock fall, blast.

• Forensic analysis of large and damaging seismic events: understanding the source and damage, assessment of dynamic loading to ground support.

• 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).

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

• Visualisation and filtering of seismicity.

• Time histories and correlation of seismic parameters.

• Analysis of source mechanisms (stereonet and source-type plots, correlation with geological structures).

• Mapping of seismic and ground motion parameters.

Modelling tools in IMS software, Gys Basson

• Viewing stress modelling results for different mining layouts.

• Integrating stress modelling results with seismic data.

• Presenting of modelling results in seismic reports.