COLORADOSCHOOLOF**MINES**

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THE COMPLEX AND DIFFICULT CHALLENGE OF MANAGING ROCKBURSTING CONDITIONS

November 20th, 12-1PM Berthoud Hall Room 241

Managing rockbursting conditions in mine development and operational environments is a complex and difficult challenge. The hazard and the associated risks can be managed based on local experience, monitoring, and informed data-rich analysis. On the other hand, blind development for deep tunneling is being carried out around the world at depths in excess of 2 km and rockbursting has become a common and serious challenge. The rockburst mechanism is predominantly tunnelinginduced dynamic rupture or strain bursting, distinct from the remote or mine-generated events that impact mining excavations.

Considerations of rock petrology, fabric, mechanical parameters, and structure allow an estimate of brittle response. The potential for energy storage and rapid release must be accounted for in order to understand the burst potential early in the basic design stage for deep tunnels. Failure to do so can result in unsafe conditions and years of delay. A multistep semi-empirical approach for early assessment of strain burst or dynamic rupture potential along deep tunnel alignments in variable ground is presented along with strategies to mitigate the impact of rockbursting during construction.



Dr. Mark Diederichs is a Professional Consulting Engineer with Innovative Geomechanics and a Professor at Queen's University in Kingston, Ontario, Canada. He is a Geological Engineer specializing in tunneling, cavern construction, underground and surface mining, rock slope stability and deep nuclear waste repository engineering. He has over 25 years of industry experience as well as 20 years of University teaching and mentoring experience.

He has published 380 refereed articles in the fields of rock mechanics and rock engineering, and has supervised over 75 research Masters and PhD students to date. In addition to bringing the world of engineering geology to over 800 first year Engineering students each year, he also teaches upper year undergrad, graduate and industry courses in field engineering geology, rock mechanics, rock engineering, engineering design, geomechanics characterization, advanced numerical modelling of rock excavations, and risk assessment for underground works. Dr. Diederichs is currently very active as an international consultant for tunnel, cavern construction and mining projects.



Nov. 20th, 12-1 PM – BERTHOUD HALL 241 LUNCH WILL BE PROVIDED

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