

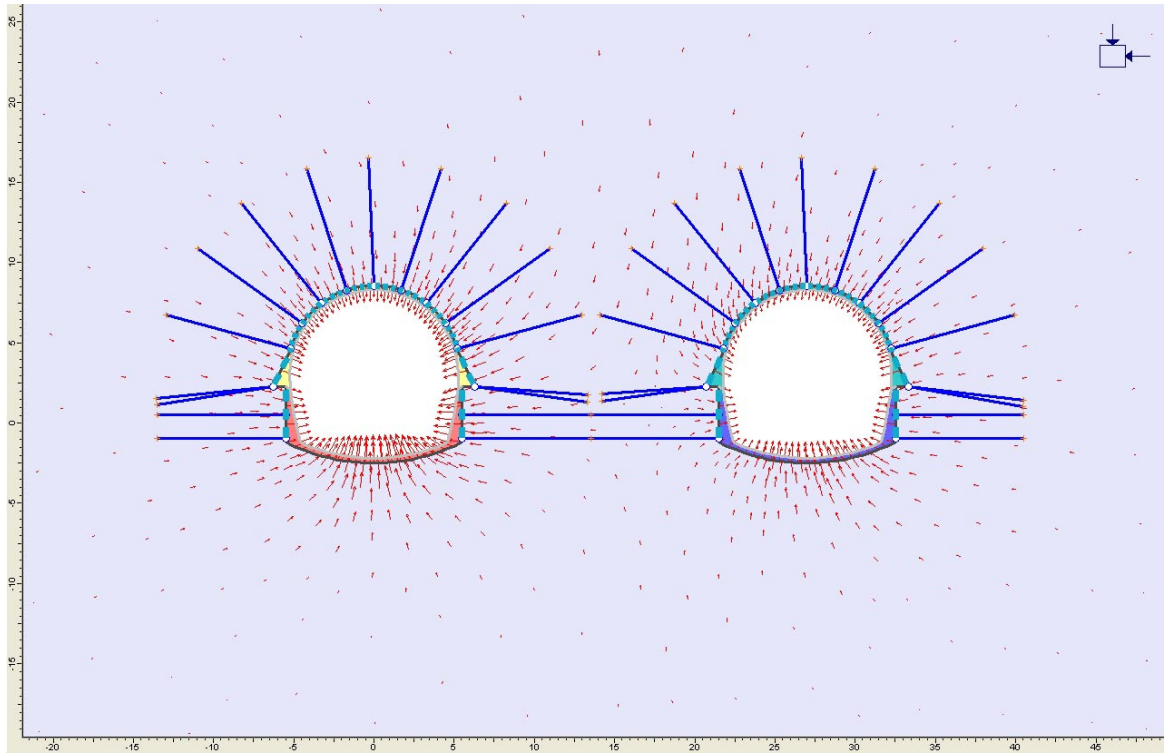
## Design of Support Systems for Underground Excavations in Rock

This Short Course will be offered before the NARMS-TAC 2002 Conference and is open to both conference participants and non-participants.



This short course will examine the design of support systems for excavations in overstressed rock conditions. It will provide an overview of the three major approaches to rock support design – empirical, analytical (rock-support interaction), and numerical techniques – and their respective advantages and drawbacks. Greater emphasis will be placed on the role of numerical methods such as the finite element method (FEM) in the design of support systems.

The short course will also look at ways of combining rock-support interaction methods with two-dimensional FEM to perform detailed design of support for excavation regions influenced by three-dimensional stress states such as those associated with tunnel faces.



## Topics to be covered include:

- Rules of thumb for anticipating support requirements
- Empirical, analytical and numerical techniques for designing support
- Complementary use of different support design approaches, and
- Finite element design of support systems in overstressed rock



The course will be very useful to engineers involved in the design of civil and mining excavations. It will expose participants to software tools available for support design in over-stressed rock.

Drs. Thamer Yacoub and Brent Corkum of Rocscience Inc. will lead the course. They have worked with practitioners for years to develop geotechnical software packages such as Phase2 (an FEM geotechnical program with extensive features for support design) and RocSupport (a rock-support inter-action program).



**Dr. Thamer Yacoub** is a geomechanics specialist with Rocscience Inc. Dr. Yacoub graduated from University of Toronto in 1999. He has been involved in the application of numerical techniques to geomechanics problems. He is currently developing new features and algorithms for Phase2 and Examine3D, stress analysis software developed by Rocscience.



**Dr. Brent Corkum** is the senior software development manager at Rocscience. Dr Corkum has played a significant role in the development of all Rocscience software. For years, he has been working with geotechnical engineers to develop state-of-the-art software solutions.