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A symposium on Recent Advances in Geotechnical Centrifuge Modeling was held on July 18-20, 1984 at the University of California at Davis. The symposium was sponsored by the National Science Foundation's Geotechnical Engineering Program and the Center for Geotechnical Modeling at the University of California at Davis.

The symposium offered an opportunity for a meeting of the International Committee on Centrifuges of the International Society for Soil Mechanics and Foundation Engineering. The U.S. participants also met to discuss the advancement of the centrifuge modeling technique in the U.S. A request is being transmitted to the American Society of Civil Engineers to establish a subcommittee on centrifuges within the Geotechnical Engineering Division.

PHYSICAL AND NUMERICAL SIMULATIONS OF SUBSIDENCE
ABOVE HIGH EXTRACTION COAL MINES

by

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Modeling the failure and settlement of strata above mine openings requires a knowledge of several different geomechanical processes such as the failure of the rock mass above the opening, the fall of this mass into the opening, the associated bulking of the rock rubble, and the recompaction of the rubble under subsequent loading. These processes are studied in this paper using physical models and analytical models. The former are based on centrifuge simulation techniques, and the latter on numerical techniques. The centrifuge experiment described here simulated the response of a shale overburden after being undermined by a long wall panel. This simulation shows progressive failure of the overburden, the formation of a failure arch, and the formation of a subsidence trough. The data from these experiments are analyzed with a numerical analysis scheme called "BLOCKS." This model treats the overburden as an assemblage of blocks. The equations of motion for each block are solved using an explicit integration operator. The displacements, rotations and collisions of each block are calculated in the model.