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ABSTRACTS OF PAPERS PRESENTED AT THE SYMPOSIUM BUT NOT PUBLISHED IN FULL IN THIS VOLUME

A MECHANICAL TEST PROCEDURE FOR AVALANCHE SNOW

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Abstract. The design, construction and testing of a portable, constant strain-rate testing machine for determining the mechanical behavior of avalanche snow is described. The machine is intended for use in determining the stress–strain–time behavior of low-density natural snow in the field. A technique for making direct measurements of strain in the snow sample is described and stress–strain curves are presented for strain-rates ranging from 0.5 to 5.0×10^{-5} s^{-1}. The densities of the snow samples tested range from 186 to 335 kg m^{-3}. Ultimate-strength data and relaxation curves are also presented.

DISCUSSION

In the absence of the authors, questions were answered by R. A. Sommerfeld.

T. Lang: The claim is made in the paper that strain-rates of the order 10^{-8} s^{-1} can be imposed. It would be helpful to show that rates of this order can be handled by the instrument, particularly in measuring the physical deformation constants.

R. A. Sommerfeld: The gearing of the machine would allow strain-rates of 10^{-8} s^{-1}. Very low deformation rates may require some special techniques because of the long times involved.

PLANE-STRAIN COMPRESSIVE STRENGTH OF COLUMNAR-GRAINED AND GRANULAR-SNOW ICE

By R. Frederking

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Abstract. An ice cover impinging on a long straight structure is assumed to be under a condition of plane strain. A technique is described for performing plane-strain compression tests, and results are presented for the strain-rate dependence of strength. The plane-strain compressive strength of ice having anisotropic structure (columnar-grained ice) is at least two and a half times the uniaxial compressive strength, whereas the plane-strain compressive strength of ice having an isotropic structure (granular-snow ice) is at most 25% greater than