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High-Resolution Thermal Expansion Measurements of H_2O Ice¹ DAVID T.W. BUCKINGHAM, SUELI H. MASUNAGA, FORREST C. GILE, J.J. NEUMEIER, Montana State Univ — Water is one of the most important substances in nature. Surprisingly, little detail is known about its thermal expansion due to the low-resolution of past measurements. The goal of this research is to measure the thermal expansion of single crystalline H_2O ice Ih with $\sim 10^4$ times greater relative resolution than has previously been done. This presentation will discuss single-crystal growth and characterization, our high-resolution thermal expansion technique, some of the challenges we faced in carrying out the measurements, and briefly present preliminary measurements on the thermal expansion and heat capacity of polycrystalline ice. The thermal expansion in the vicinity of the glass transition at $\sim 110K$ [1] will be discussed.

[1] Suga, H., Thermochimica Acta, 300, pp. 117-126, 1997.

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