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Abstract for an Invited Paper
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Studying Quantum Liquids and Solids by a Classical Technique¹

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³He and ⁴He liquids and solids have many unusual bulk properties as a result of their quantum behavior. For example, they remain liquids to absolute zero and the ³He melting pressure has a minimum as well that makes it useful for thermometry. The minimum occurs because of exchange effects in the solid that cause it to have more entropy than the liquid below the temperature of the minimum. Solid ³He exhibits at least five magnetic phases at temperatures near 1 mK. All of these phenomena and others can be investigated to advantage by a high-resolution measurement of the pressure that the solid exerts on its container using a capacitive pressure transducer. A brief description of the transducer will be given, then a review of some of the measurements that have been made with it. Recent, previously unreported results on magnetic ordering in solid ³He, will be presented.

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