Non-Linear Second Sound In 3He-4He Mixtures Near The Tricritical Point

Vladimir Dotsenko(a), Ashutosh Tiwari(a), Masoud Mohazzab(a), Norbert Mulders(a), Alfred Nash(b), Melora Larson(b), Ben Vollmayr-Lee(c)

(a) Department of Physics and Astronomy, University of Delaware, Newark, DE 19716, USA
(b) Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109, USA
(c) Department of Physics, Bucknell University, Lewisburg, PA 17837, USA.

The tricritical point in the phase diagram of 3He-4He mixtures offers unique opportunities to test our understanding of critical phenomena. Because D = 3 is the marginal spatial dimension for tricriticality, associated critical exponents are exact integer fraction. In addition, one expects to find logarithmic corrections. We present results for the superfluid density, obtained from time-of-flight non-linear second sound measurements near the tricritical point and along the phase separation curve.