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Sub-millimeter Size Sensors for Measurements in Cryogenic Turbulence YIHUI ZHOU, Department of Physics, University of Florida, Gainesville, FL 32611-8440, USA, VADIM F. MITIN, V. Lashkarev Institute of Semiconductor Physics, NASU, Kiev, Ukraine, SHU-CHEN LIU, ISAAC LURIA, MARIO PADRON, RIDVAN ADJIMAMBETOV, GARY G. IHAS, Department of Physics, University of Florida, Gainesville, FL 32611-8440, USA, VADIM F. MITIN COLLABORATION — Classical turbulence research is advancing by utilizing MEMS temperature and pressure fluctuation sensor technology. Turbulence research at cryogenic temperatures has many advantages over the classical approach, such as extreme stability of control parameters and very high Reynolds numbers in small apparatus. However, changes in material properties from room temperature to 1 K (and below) make most sensors unusable at low temperature. A new type of thermistor, incorporating a Ge-film deposited on a GaAs substrate, has been designed. It provides high sensitivity in the range of 20 mK to 5 K. In this paper, the design and characteristics of these sensors is discussed, and experimental data from three thermistors is presented. Progress on a miniature pressure transducer is also described.

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