



## HEMTs for deep cryogenic high-impedance and low-frequency readout electronics

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To fill the gap of high performance FETs (Field-Effect Transistors) for high impedance, low-power and low-frequency deep cryogenic readout electronics, and to meet the needs of various experiments from astrophysics to mesoscopic physics, a long-term investigation has been conducted at CNRS/LPN, and significant progress has been accomplished. Specially designed HEMTs with different gate configurations have been realized and their characteristics will be reported. As an example, for the HEMTs with an input capacitance of 3.5 pF and a power consumption of 100  $\mu$ W at 4.2 K, the equivalent input noise-voltage and the noise-current at 1 kHz can reach 1 nV/Hz<sup>1/2</sup> and 0.1 fA/Hz<sup>1/2</sup>, respectively; and their white noise voltage can attain 0.2 nV/Hz<sup>1/2</sup>; for the switch application, their drain-source resistance can be varied from few tens  $\Omega$  to about 1 T $\Omega$ .