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Millimeter wave emission from GaN high electron mobility transistor

ARTICLE in APPLIED PHYSICS LETTERS 84(1) · JANUARY 2004

The University of Aizu, Hukusima, Fukushima, Japan
Impact Factor: 3.52 · DOI: 10.1063/1.1638625



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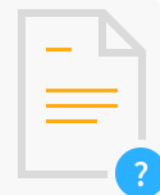
Abstract

We report on millimeter wave electromagnetic radiation from a GaN high electron mobility transistor with the gate length of 1.5 μm at 8 K. The emission takes place at gate and drain voltages in the linear regime of operation but close to the saturation voltage with the principal emission peak at approximately 75 GHz, which is much higher than the device cut-off frequency. An explanation of this effect involves the "shallow water" plasma wave instability, with the frequency of the plasma waves decreased by the ungated regions of the device.

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Enhanced Terahertz Detection using Multiple GaAs HEMTs Connected in Series

Microwave Symposium Digest, 2009. MTT '09. IEEE MTT-S International; 07/2009

Tamer A. Elkhatib · D.B. Veksler · K.N. Salama · X.-C. Zhang · M.S. Shur

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"...eld a electromagnetic radiation of 75 GHz which much higher than f T of 8 GHz and f max of 20 GHz [27]. The AlGaIn/GaN HEMT with 0.15 μm gate length produced 1.5 THz radiation at room temperature [28]" [more]

GaN-based Semiconductor Devices for Terahertz Technology

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Terahertz Emission and Detection by Plasma Waves in Nanometre-Size Field Effect Transistors.

IEICE Transactions on Electronics 07/2006; 89-C:926-930. DOI:10.1093/ietele/e89-c.7.926 · **0.39 Impact Factor**

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