

東北大学
通研講演会
第 54 回ナノ・スピン工学研究会
ーテラヘルツ波帯プラズマ電子デバイスー

日時： 2011 年 11 月 30 日(水) 14:00－17:00

場所： 東北大学 電気通信研究所 ナノ・スピン研究棟 5 階 A508 室
〒980-8577 仙台市青葉区片平 2－1－1

言語： 英語

プログラム：

14:00 - 17:00 **“Trends in terahertz plasma wave devices” (in English)**
Assoc. Prof. Dr. Yahya Moubarak MEZIANI

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Terahertz (THz) rays are located in the spectral region 0.1-10 THz between the microwave and the infrared portion of the electromagnetic spectrum. THz ray has the potential to penetrate most common living materials like cloths, papers or plastics. Collective charge density oscillations in two-dimensional electron systems can be used either for detection and/or emission of THz electromagnetic radiations. In this lecture, recent advances in the development of the THz plasma wave devices are reviewed. First, fundamental basis of plasma wave dynamics in two dimensional semiconductor quantum wells in field effect transistors will be lectured. Second, our recent results on detection of THz radiation by means of different types/architectures of sub-micron transistors will be reviewed. Possible applications in THz imaging will be presented. Third, the emission in the THz range by using GaN based transistors and doubly interdigitated grating gates will be discussed. The emission will be demonstrated in Fourier spectrometer system coupled with a Si-Bolometer detector. Finally, future development of devices for THz spectroscopy and imaging system will be addressed.

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