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Titel: Millimeterwave Technology for Remote Detection and Imaging of Concealed Weapons and Improvised Explosive Devices

Abstract:

Sensors used for Security purposes have to cover the non invasive control of men and direct surroundings of buildings and camps to detect weapons, explosives and chemical or biological threat material. Those sensors have to cope with different environmental conditions. Ideally the control of people has to be done over a longer distance as stand-off detection.

This talk concentrates on passive radiometric sensors at 0.1 and 0.2 THz as well as active sensors working in that frequency region. These systems are able to detect non-metallic objects like ceramic knives underneath clothings, which is due to their high thermal sensibility as well as their very good long time stability. Additionally, stand-off surveillance is possible which is of high importance with regard to suicide bombers. The presentation will include images at both mentioned frequencies comparing the efficiency in terms of range and resolution. In addition, the concept of the sensor design showing a Dicke-type 220GHz radiometer using new LNAs and the results along with image enhancement methods are shown. There will be also a comparison between active and passive systems in respect to scanning time, spacial resolution and detection level.