

# Ultra-wide band radar system using impulse radiating antennas in The Netherlands

The important contributions of Dr. Dave Giri

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## *Abstract*—.

Beside the books and articles by dr. Dave Giri, his personal involvement to the scientific research programs in the Netherlands in the field of ultra-wide Band high power microwave systems has been paramount. By his expertise, an ultra-wide band radar system was build and this system was used in the field of detection of unexploded ordnance as well as in in high power microwave susceptibility tests. In this contribution these important contributions are reviewed and discussed.

High Power Microwaves, High Power Electromagnetics,  
Impulse radiating antennas, land mines

## I. INTRODUCTION

In the nineties of the last century, the author of this paper was introduced into the field of Nuclear Electromagnetic Pulse Protection (NEMP) and High Power Microwaves (HPM) by the workshops organized by the late dr. Carl Baum. This was the very beginning of the applied scientific engagement with dr. Giri. In the Netherlands, we were running research programs on NEMP and the interest shifted from NEMP to HPM. End of the nineties also a program was started in the field of Humanitarian Demining. At TNO we were enthusiastic about the famous Impulse Radiating Antenna (IRA) and its ability we thought this antenna could help us to investigate the IRA-performance in detecting unexploded ordnance [1] and [2]. We investigated the system and as well as with aid of the Brewster Angle. Dr. Giri was involved to help us design the IRA. This system contained both a transceiver and a receiver IRA. Its specifications were to detect buried objects. Jointly, we wrote a research report on the design and we tested the detection system [1]. During the ISAF mission, we also used the system to detect IEDs.

In the presentation during this special session, the author will highlight the important influence of his scientific talents within the Dutch High Power Microwave research programs, the humanitarian demining program. Dr. Giri's contributions, not only scientifically but also personally, will be highlighted..

## REFERENCES

[1] J.B. Rhebergen, A.P.M. Zwamborn and D.V. Giri, "Design of an ultra-wideband ground-penetrating radar system using impulse radiating antennas," Detection of abandoned land mines", 12-14 October 1998, Conference Publication No. 458.

[2] Lo Vetri, J., Primak, S., van Leersum, B.J.A.M., Zwamborn, A.P.M. (2002). Feasibility Study into the Identification of Landmines Using UWB Radar: An Analysis Using Synthesized Data. In: Heyman, E., Mandelbaum, B., Shiloh, J. (eds) Ultra-Wideband Short-Pulse Electromagnetics 4. Springer, Boston, MA. [https://doi.org/10.1007/0-306-47093-4\\_45](https://doi.org/10.1007/0-306-47093-4_45)