

Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Development of sub-THz gyrotrons for detecting concealed radioactive materials¹ GREGORY NUSINOVICH, RUIFENG PU, OLEKSANDR SINITSYN, AMIT KESAR, THOMAS ANTONSEN, JR., University of Maryland, YAKOV DIMANT, Boston University, VICTOR GRANATSTEIN, University of Maryland, IREAP TEAM, BOSTON UNIVERSITY COLLABORATION — One of the topics of a recently formed Center for Applied Electromagnetics at the University of Maryland is the development of high-power, THz-range gyrotrons with pulsed solenoids. It is planned that radiation of such gyrotrons can be focused in small spots in atmospheric air where the amplitude of the wave field exceeds the breakdown threshold. However, the volume where this radiation is focused is so small that at the ambient electron density there is a very small probability during the THz pulse that there will be any free electrons to initiate this avalanche breakdown process. Thus, if breakdown does occur, it may be attributed to the presence in the vicinity of this volume of some concealed radioactive materials which have greatly increased the background ionization level. In this paper, an overview of the 300 kW, 670 GHz gyrotron development and discussion of various issues important for given application will be presented.

¹This work was supported by the US Office of Naval Research.

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Date submitted: 26 Jul 2010

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