

# 模擬利用似噪音脈衝產生兆赫波之研究

研究生: 王昭凱

指導教授: 潘犀靈 教授

國立清華大學 光電工程研究所

## 摘要

本論文的研究主題是探討由似噪音脈衝產生之兆赫波的特性。我們研究自相干量測中不同底座寬度的似噪音脈衝對兆赫波之電場與頻譜的影響。由於似噪音脈衝以及由似噪音脈衝產生的兆赫波電場本身具有隨機性質，每一發脈衝及兆赫波電場將不會重複，因此我們兩種方式來分析兆赫波的頻譜。我們也使用不同寬度的高斯脈衝來偵測似噪音脈衝產生之兆赫波電場以及頻譜。

我們更進一步討論兩種頻譜分析方式如何對應到實際情況，不同量測(資料處理)方式將影響到兆赫波頻譜的高頻部分。

# Simulation of Terahertz pulse generation by noise like pulse

Student: Chao-Kai Wang

Advisor: Prof. Ci-Ling Pan

Institute of Photonics Technologies

National Tsing Hua University

## **Abstract**

The aim of this thesis is to study the characteristic of noise like pulse generated terahertz field. We study different pedestal width noise like pulse from AC trace effect on the THz field and spectrum. Because of the randomness of noise like pulse and generated THz field, each of them won't be the same. So we use two kinds of method to analyze the THz spectrum. We also use different width of Gaussian pulse to probe the noise like pulse generated THz field and analyze its spectrum.

We further discuss how the two kinds of analysis connect to the actual event. The method of data processing will influence on the result of the high frequency component in the spectrum.