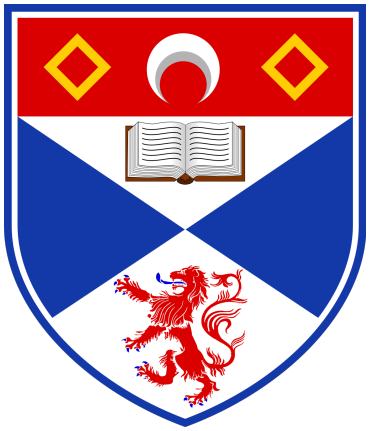

**University of St. Andrews**

School of Physics and Astronomy

# Millimetre-Wave Cloud Profiling Radar

Pre-Project Review

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**Abstract**

This work is about . . .

# 1 Introduction

Why millimetre waves? Why is meteorological radar useful?

# 2 Meteorological radar

## 2.1 Radar range equation

Mention the radar range equation. Brief mention of Rayleigh scattering. The meteorological radar range equation, derived by Probert-Jones in 1962, is[1]

$$y = mx + c \tag{1}$$

# 3 Types of radar

## 3.1 Pulse Doppler radar

Brief introduction to pulse Doppler radar.

## 3.2 Continuous wave radar

Introduction to continuous wave radar.

## 3.3 Frequency-modulated continuous wave radar

Continuous wave radar is useless without frequency modulation etc etc. Why is this better than pulse Doppler radar?

## 3.4 Solid state 94-GHz FMCW cloud profiling radar

Discuss the radar at St. Andrews.

### 3.4.1 Project work

Discuss the rationale behind this project.

# 4 Conclusions

# References

[1] J. R. Probert-Jones, "The radar equation in meteorology", Quarterly Journal of the Royal Meteorological Society **88**, 485–495 (1962).