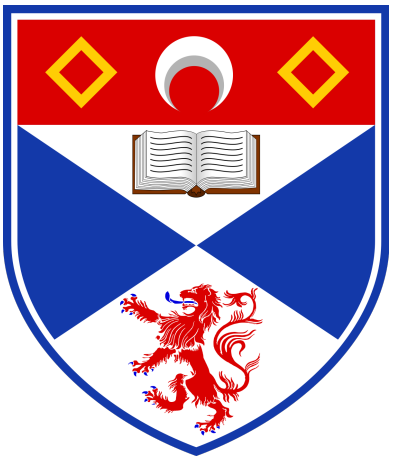

University of St Andrews

School of Physics and Astronomy

Pre-Project Review

Module: PH4111

by

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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).