Observing Jovian Decametric Radio Emissions with a Software Defined Radio Telescope

David Kirwan, Alan Davy, and John Ronan

Waterford Institute of Technology,
Dept of Maths and Physics,
Cork Rd, Waterford City, Ireland
dkirwan@tssg.org,adavy@tssg.org
http://www.wit.ie

1 Introduction

Belcher [1987]

This is typically an outline description detailing the background to the problem.

2 Scope

Students should identify whether the research outcomes are likely to have universal application or have a defined scope. This is important in gauging the extent to which the work is capable of independent replication.

3 Research Questions

A clear, precise definition of the problem is very important to focus on the research activity. great care should be used in devising the research questions. They define the structure of the investigation/innovation that will be used and an essential metric of the quality of the dissertation is the degree to which the research question has/have been answered.

- Do amateur radio emissions adversely affect radio astronomy in the 15m band?
- What can be done using software defined radio to filter local radio interference from radio astronomy observations?
- How cheaply can a fully automated radio telescope listening station be built using current IOT technologies?

4 Methodology

This should outline the approach and methodology being proposed by the student to address the research question.

5 Preliminary Literature Review

This should contain a review of a number of books, journal articles and web references of relevance to the research area proposed. The literature should contain seminal and recent referenced research material that is categorised under a number of relevant sub-themes.

6 Contribution to Research Knowledge Anticipated

A dissertation is a work of scholarly investigation that is grounded in the research literature and differs from a report or a book. It is judged on a prescribed set of academic criteria. Although the likely outcomes are tentative at hte start of the program, it is useful to incorporate them into the research proposal to help focus the work program.

7 Description of the Experimental Design / Validation Methodology

A dissertation must employ rigorous scientific argument. The experimental design and the validation methodology must be specified in great detail in the proposal. At this proposal stage you should define clear evaluation criteria.

8 Special Resources Required

The research work may require access to specialised equipment, software, journals and so on.

Access to the HackRF or another similar SDR is required. Access to the RadioJove Prediction software

9 Main Milestones Anticipated

Students should agree a number of milestones and their likely delivery dates with their supervisor at the start of the progress.

- Design the testbed
- Build the telescope
- Perform a site survey with the spectrum analyser
- Replicate the testbed at a second site

Bibliography

John W. Belcher. The jupiter-io connection: An alfven engine in space. *Science*, 238(Oct 9):170–176, 1987.

A Appendix

Here is some content in the appendix

1..1 How I became inspired

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Praesent ut egestas sapien. Sed vehicula, libero vitae ornare interdum, nunc felis rhoncus risus, ut lobortis quam ligula sed nunc. Suspendisse potenti. Proin lacinia ex dui, eu maximus justo consequat porttitor. Pellentesque sollicitudin rutrum ex hendrerit vestibulum. Etiam luctus leo vitae magna sagittis feugiat a vitae ligula. Maecenas suscipit interdum tincidunt. Etiam a sapien elit. Nam dictum sed felis non commodo.