

Doc Dave

PHD NOTES

Short-Wavelength Accelerators

Dave Scott

*Based on a course by Dr. Guoxing Xia, Dr. Rosa Letizia,
Prof. Bernhard Hidding, Prof. Steve Jamison, Prof. Alec
Thomas, and Dr. Louise Willingale*

July 4, 2018

Contents

Chapter 1

Radio Frequency (RF)

1.1 Recap of Electromagnetic Theory

1.2 Cavity Basics

1.3 Equivalent Circuits and Definitions

1.4 RF Structure Types

1.5 RF Source Basics

1.6 Power and Reflections

1.7 Cavity Failures

1.8 Multicell Cavities

1.9 Effect of Errors

1.10⁴ Side-Coupled Linacs

1.11 Coupling Power to Cavities

1.12 Defect Modes